

# *american* **aircraft** **MODELER**

JULY 1969

60c (7/-) CC

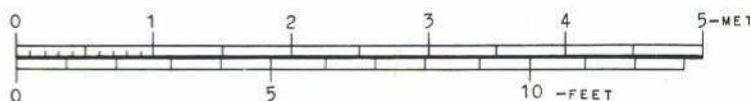
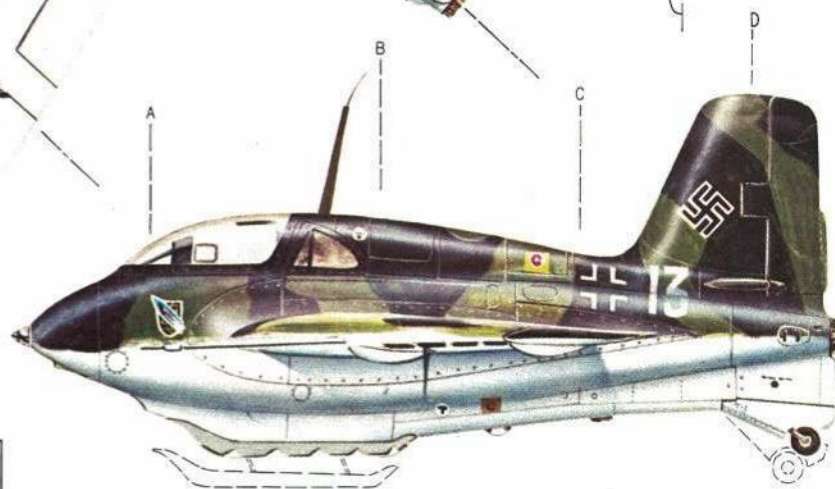
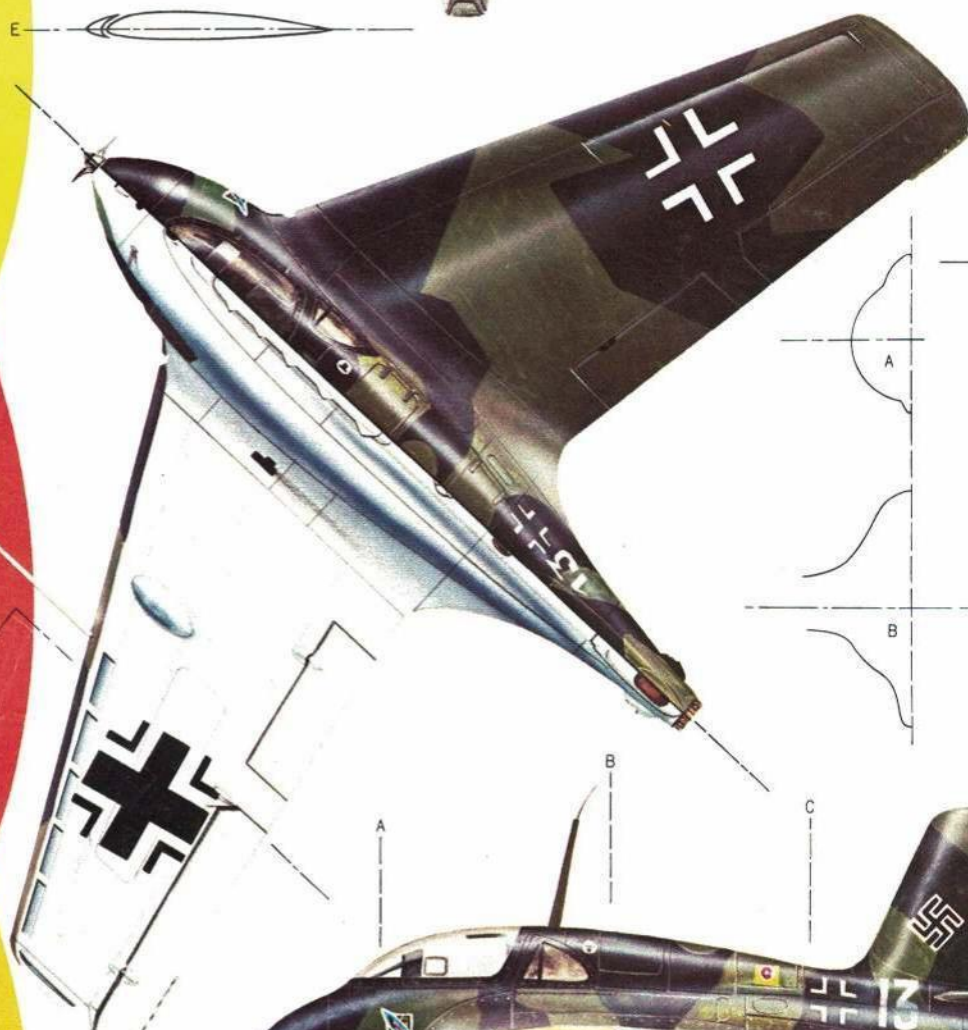
Messerschmitt  
Me 163B-1A Komet

World's First  
Rocket Interceptor

Full-Color  
Centerspread  
P-40C  
Tomahawk

R/C in the Air and  
Afloat: 1/4A Rivets  
plus  
Skimmer Airboat

Tenderfoot,  
fly the  
Pusher Galore!



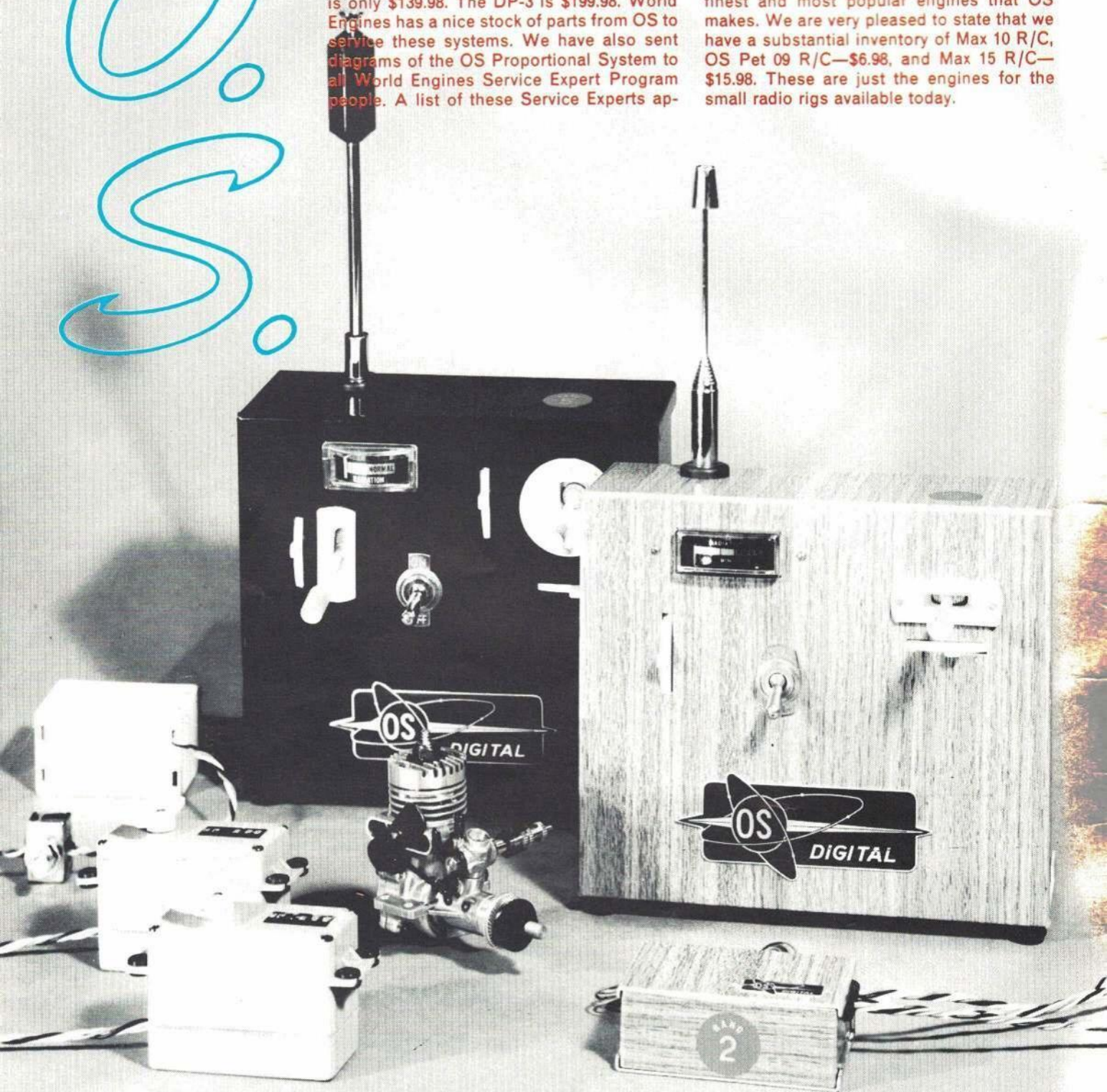
JOHN KARTER



We are pleased to introduce the new DP-2 OS radio equipment. This is an economy line equipment when compared to the more custom type DP-3 and DP-4. The selling price of a complete DP-2 system with charger and nickel cadmium batteries for the receiver is only \$139.98. The DP-3 is \$199.98. World Engines has a nice stock of parts from OS to service these systems. We have also sent diagrams of the OS Proportional System to all World Engines Service Expert Program people. A list of these Service Experts ap-

pear in March, 1969 Model Airplane News. We are very pleased to announce that we have sold a substantial number of DP-3 rigs and very few of them have come back into the plant for service.

OS Max 10 R/C—\$11.98. This is one of the finest and most popular engines that OS makes. We are very pleased to state that we have a substantial inventory of Max 10 R/C, OS Pet 09 R/C—\$6.98, and Max 15 R/C—\$15.98. These are just the engines for the small radio rigs available today.



# WORLD ENGINES

8960 ROSSASH AVE.

CINCINNATI, OHIO 45236



# NEW.....

## from the Reliability Leaders

A brand new concept in 3-Axis Single Stick from E. K. the reliability leader!

Completely enclosed  
Adjustable Spring tension  
Rudder trim on the knob

At last... a completely enclosed stick assembly. Prevents dirt, grime, fuel, etc., from getting inside of the transmitter. Improved appearance.

Adjustable Spring Tension... Now, you can enjoy the feel you want. A simple adjustment with a screwdriver allows you to control tension on aileron and elevator axis, independently!

Rudder trim... built-in. Controlled by trim lever on the back side of knob.



Available in both Logitrol or Pro Series and either 5 or 7 channel. Also available left-handed. Let us custom a system to fit you.

Logitrol		Pro Series	
1.5	\$420.00	1.5	\$495.00
1.7	\$470.00	1.7	\$515.00
(Left hand model add \$20.00)			

Two Stick Systems			
Logitrol		Pro Series	
2.5	\$395.00	2.5	\$470.00
2.7	\$445.00	2.7	\$520.00
(Available throttle left or right)			

All frequencies 27, 6 meter or 72, same price

### FACTORY AUTHORIZED SALES AND SERVICE CENTERS

BRAND NEW...to serve you and our dealers better FACTORY TRAINED SERVICE PERSONNEL.

#### Los Angeles Area

EK WEST (213) 326-7733

23625 Pineforest Lane

Harbor City, Calif. 90710

#### San Francisco Area

NELSON MODEL PRODUCTS, INC.

6053 Dougherty Road (415) 828-6350

Dublin, Calif. 94566

#### Chicago Area

RADIO CONTROL CENTRAL

Box 449 Elmhurst, Ill. 60126

Service (312) 539-7433

Sales (312) 832-4908

#### Kansas City Area

KEN'S R/C (913) 631-3158

10915 W. 59th Terrace

Shawnee, Kansas 66203

#### Northeast Area

NEW ENGLAND R/C, INC. (617) 343-4827

340 Broad St. P. O. Box 437

Fitchburg, Mass. 01420

#### Southeast Area

COMING SOON...To be

ANNOUNCED!



## PRODUCTS INC.

3233 W. EULESS BLVD

HURST, TEXAS 76053

(817) 283-4092



**ONLY POLK'S HAS 'EM!**

*Berkeley's*

**DISCONTINUED MODELS**

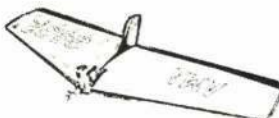
A Polk's Exclusive! These popular kits have been discontinued and will soon become "Collector's Items." We are the only one who has them. Get 'em while they last.



**"SEA-CAT"**  
\$12.95

R/C or Free-Flight. For .15-.25 Engines. 68" W.S.

**"ORBIT ACE"**  
\$3.95



Control-Line. For .19-.35 Engines. 40" W.S.



**INTERCEPTOR "15"**

\$2.50

Control-Line. For .15-.25 Engines. Interceptor "35" for Control-Line. .29-.35 Engines. \$3.50.



**PRIVATEER "SUPER-15" \$7.95**

Radio-Control. For .15-.19 Engines. 60" W.S.



**CESSNA "BIRD DOG" \$3.95**

Free-Flight  
.049 Engines  
1" Scale

**OTHER BERKELEY KITS**

BUZZARD 144 (F.F. and R/C)	\$24.95
RAMROD 600 (Free-Flight)	6.95
AIRCOUPE (F.F., C.L. and R/C)	7.95
COLONIAL SKIM Seaplane (F.F.)	3.95
SUPER NAVION (R/C and C.L.)	24.95
CESSNA 195 (Control-Line)	7.95
MINNOW (Control-Line)	7.95
BUSTER (R/C & Control-Line)	14.95
ZILCH "X-PENDABLE" (C.L.)	4.95
"DAZE" Combat Trainer (C.L.)	2.95
TYRANT RAT RACE (C.L.)	5.95
F6F HELLCAT (Control-Line)	2.95
P-47 THUNDERBOLT (C.L.)	2.95
T-34A MENTOR (Control-Line)	7.95
T-33A (Free-Flight)	5.95
CESSNA BIRD DOG 5/8 (F.F.)	1.95
PIPER "TRI-PACER" (F.F.)	1.95
P-40 WARHAWK (Free-Flight)	1.95

**BERKELEY R/C BOAT KITS**

42' CONSTELLATION	\$ 8.95
CHRIS-CRAFT CRUISER	4.95

**POLK'S**

**HOBBY DEPT. STORE**  
314 FIFTH AVE. AM-79

(32 ST.) NEW YORK, N. Y. 10001

# american aircraft MODELER

VOLUME 69, NUMBER 1

JULY 1969

**COVER PHOTO:** WW-II Messerschmitt Me.163B-1A Komet, first rocket interceptor: top of 595 mph, climb to 40,000 ft., 3.35 min. A 3800-lb.-thrust Walter liquid-fueled engine ran eight minutes. Bjorn Karlstrom painting.

**WILLIAM J. WINTER — PUBLISHER**

Edward C. Sweeney, Jr., Editor

Sally Barry, Managing Editor

*Articles:*

<b>FOR THE TENDERFOOT — PUSHER GALORE</b> , Bill Hannan	12
<b>MIRACLE AT LE MANS</b> , Douglas J. Ingells	16
<b>.02 RIVETS</b> , Owen Kampen	19
<b>ATOM</b> , Howard C. Mottin	22
<b>THE ULTIMATE MODELS</b> , George Perryman	26
<b>THE SKIMMER</b> , Paul W. Hook	28
<b>CELLULOSE WINGS</b> , Gerald Hayhurst	30
<b>BALSA BAKA BOMB</b> , Bill Hannan	42

*Features:*

<b>RADIO CONTROL WORLD</b> , Howard McEntee	32
<b>GETTING STARTED IN R/C</b> , Howard McEntee	42D
<b>SCALE TECHNIQUES FOR THE PLASTIC MODELER</b> , John N. Townsley	53

*Academy of Model Aeronautics:*

<b>EXECUTIVE COUNCIL MEETING</b>	43
<b>NATS NOTES, ONCE OVER (AMA NEWS BITS)</b>	45
<b>ST. LOUIS MODELING PROMOTION</b>	46
<b>AMA NEWS EXTRA</b>	49
<b>CONTEST CALENDAR, OFFICER DIRECTORY</b>	50

*National Association of Rocketry:*

<b>MODEL ROCKETEER</b>	51
------------------------	----

*Departments:*

<b>EDITORIAL — STRAIGHT AND LEVEL</b> , William J. Winter	6
<b>YOU SAID IT — LETTERS TO THE EDITOR</b>	8
<b>NEW PRODUCTS CHECK LIST</b>	36
<b>CLASSIFIED ADVERTISING</b>	82
<b>QUALITY HOBBY SHOPS</b>	82

Published monthly by Potomac Aviation Publications, Inc., 733 Fifteenth Street, N. W., Washington, D. C. 20005. William J. Winter, Publisher; Edward C. Sweeney, Jr., Secretary; American Aircraft Modeler Business Manager, Harvey E. Cantrell.

**ADVERTISING DEPARTMENT**

733 15th St., N. W., Washington, D. C. 20005 (202) 737-4288

Midwest Advertising Representative: G. S. Anderson & Associates, 4621 Grand Ave., Western Springs, Illinois 60558. Tel: (312) 246-0837

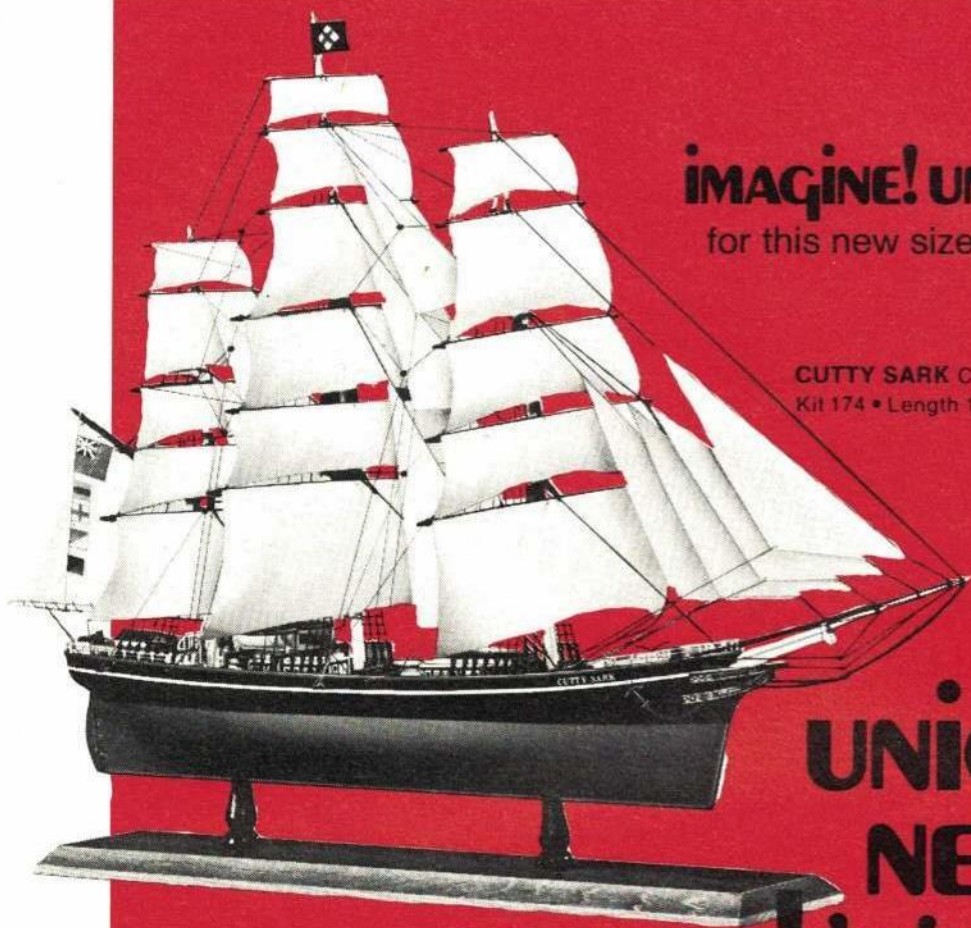
Western Advertising Representative: Aaron D. Viller & Associates, 5311 Venice Blvd., Los Angeles, California 90019. Tel: (213) 939-1161

Subscription Rates: In U. S., Possessions and Canada, 1 Year, \$6.00; 2 Years, \$11.00; 3 Years, \$15.00. Elsewhere, \$8 for one year. Payable in advance. Single copies, 60 cents. Six weeks are required for change of address. In ordering a change, write to American Aircraft Modeler, 733 Fifteenth Street, N. W., Washington, D. C. 20005. Give both new and old address as printed on last label.

We cannot accept responsibility for unsolicited manuscripts or artwork. Any material submitted must include return postage. When writing the editors address letters: Editorial Office, American Aircraft Modeler, 733 Fifteenth Street, N. W., Washington, D. C. 20005.

Second class postage paid at Washington, D. C. and at additional mailing offices.  
© Potomac Aviation Publications, Inc. 1969. All rights reserved. Printed in the U. S. A.  
Postmaster: Send Form 3579 to American Aircraft Modeler,  
733 Fifteenth St., N. W., Washington, D. C. 20005.





**IMAGINE! UNDER \$10**  
for this new size "Best Seller"

**CUTTY SARK** Clipper Ship **995**  
Kit 174 • Length 15" • Height 9½"

Wood ship model with carved wood hull and cast metal fittings. Complete with cloth sails and display stand.

# UNIQUE NEW WOOD 'N' METAL MODELS

## PARTIAL LIST OF CUSTOM PARTS

- Metal Fenders
- Louvered Metal Hood
- Metal Radiator
- Precision Metal Fittings
- Wood Chassis & Body
- Wood Display Stand



Introducing a new kind of  
**ANTIQUE CAR**  
with hand crafted metal  
& wood components

**1910 MAXWELL** **1295**  
KIT 173

¾" SCALE

An Original New Design  
• Accurately Scaled From Material Furnished By The Automobile Reference Collection Of The Philadelphia Library.

SEE YOUR DEALER. If kits are not available at dealer, you may order direct from factory adding 50c for postage & handling. Outside U. S. A. add \$1.00. Send for Catalog. 25c.

**Scientific**

**SCIENTIFIC MODELS INC.** 111A MONROE STREET  
NEWARK, NEW JERSEY 07105





## STRAIGHT AND LEVEL



**Big or little, airplanes are both simple and complex. Sometimes we forget how simple things can be.**

AN airplane is a surf-board skimming a sea of air. A kite with its motor tied to the center of the earth. It is a B-70, a swing-wing F-111, supersonic projectiles which man could not have flown without his computers. Something as simple as a paper dart, or as complex as a coke-bottle fuselaged delta with a mighty turbine and roaring afterburner.

A model airplane is a couple of pieces of sheet balsa and a hard strip to fasten them to. A shimmering thin piece of film spread upon the water, and laid over a spiderweb frame without dope or glue. A slow-turning prop that goes tick-tock. A \$500 roaring package of electronics and gismos cocooned in foam rubber.

It does not necessarily take a fortune to make a flying machine. The home-builders who put together, over two years of evenings and weekends, a Tradewind or an E.A.A. BiPe, prove that. So does the indoor builder who sands and polishes from magnificent white balsa a dream of a hand-launched glider that faultlessly circles for well over a minute.

And this is something we need to think about radio-control, especially you 13-to-14-year-olds with your paper routes, and lawns to cut in the hot sun. An R/C crate is a box with a dihedralled high wing and maybe only a noisy 02 on the nose. As well as a skinned-foam-winged bullet that goes zip-zip-zip when you tug on the lever switches. It is a shaking Galloping Ghoster as well as a smooth-as-silk full-houser. A two-function digital as well as a seven-function black or red or green box. No matter what it is, it does something better than any other gadget, widget, or system. The crate you put it in does its bit with elan. And because it does, its owner can get his kicks—if only someone would tell him so!

To our way of thinking, the incomparable achievement in radio-control is not the costly system which puts down the flaps, tramps on the brakes, or trims the pilot's helmet. It is the two-function little thing which smoothly proportions a rudder and elevator on a glider, or rudder and engine throttle on a powered craft. That steers a boat with the best of 'em and governs that howling engine as well. That steers a race car, controls the power and even puts on the brakes. Or haven't you noticed what has been happening to "traditional" single channel?

Two-function digital (and all sorts of Galloping Ghost) prices most of us into, not out of, the hobby. It has taken us from escapements and motorized escapements, or servos if that confuses you, into a wonderful world of enjoyment. It has opened up the skies to anyone with the sense to grasp what it offers.

Everything—bar none—has its limitations. All radios, all crates, big and little, offer something good you

can't find in anything else. The grooving multi's that fly on a string; why you can't feel the air with them! You can with a little flat-bottomed-winger. It's alive! By itself, man, inspired by the substance of invisible forces—the little risers, and bumps, and the reactions to what you tell it to do. The craft wants to do things that a multi man does not understand—he'd cuss them. But play them, and the wind, and the ship is a cork come to life.

Flying it is an art. Play it right and you unlock the secrets of bouyant flight. The crate flies like the birds, for it must be totally stable. It has an independence. It can take care of itself and somehow, you admire that as you watch, and it is a challenge. You against the elemental forces of nature and of flight. Like catching a big fish with a thin line. A rope spoils the fun.

You know, too, when you are good at it. Someday a soaring hawk or some sea bird effortlessly plying the wind, will catch your eye. Watch the bird circle, gain altitude. Think rudder! When the bird responds to rudder just when and how you think he should (OK, maybe it's a she, but who cares?), and you find yourself praising his perfect control, just held so long, then taken off, just as you'd do it, then you've earned your wings.

That's a wee part of it. What makes it magic is a loving to watch an airplane fly. A sense of feel. Feel for a ship on its own, yet under control. You do feel it. No mistake about that. Throw it around, force it, and you'll note nothing. Make it an extension of your senses, and suddenly you are in it. There is no earth around you, just you and your handiwork up there, alone. Oh, you can fly multi, too. It's exciting, different. Yet what it is different from, must be different too. Q.E.D.

There's a world of pleasure in the simple, cheap stuff. Fun and satisfaction is where you find it—or make it. And that goes for boats, cars, and planes. With so many guys eating their hearts out these days for nothing but the "best" and the most expensive, there's a fearsome wastage. The "thing" is to get into it anyway you can. If the 45 stunter is too costly and too risky, build a Ringmaster. If the FAI free-flight is an expensive bomb, fly sport with a Half A. Or a tow-line glider. Or try making a really good hand-launch glider or an ROG. Do something, anything. Everything is good.

Why must model airplanes be such a problem to the beginner? Why can't the beginner just get started? Personally, we'd rather watch Phil Kraft than be Phil Kraft—which would be pretty good, too, come to think of it! *Publisher's note: Do you have a model design you'd like to see published? American Aircraft Modeler is looking for all types of designs, articles and plans. If you have an idea, just drop us a line!*



## NEW ORBIT '69 A BIG DIFFERENCE



**AVAILABLE NOW  
SEE YOUR DEALER**



Orbit digital proportional 4-8 IC MK II and 6-12IC MK II systems were designed for you. Flyability, reliability and price are right. Compare performance when you buy.

**XMTR** New super-smooth action gimbal for positive control. New case is light-weight and comfortable to hold. Buys you beautiful control, less fatigue.

**RCVR** Reliable IC circuitry buys you light-weight, miniature size and the highest performance.

**SERVOs** New PS-3D MK II or high torque PS-4D buy you incomparable resolution (stick and control surfaces are practically locked together like the steering mechanism of a fine sports car) combined with exact neutral centering for absolute control.

**COMPLETE ORBIT SYSTEM:** Transmitter, receiver, airborne power-pack, transmitter power-pack, charger, 4 PS-4D servos (rotary output) or 4 PS-3D MK II servos (dual rack and wheel output), cables and connectors, switch installation and operation manual. **Single-stick or two-stick, 27 or 72 MHz bands. 4-8IC MK II \$399.95, 6-12IC MK II \$449.95**

**Orbit Electronics**  
11601 Anabel Ave., Garden Grove, Calif. 92640  
MP69427





### Many thanks

I have enjoyed your magazine for a year now, and I am happy to subscribe again.

I am glad to see you are printing articles for the Tenderfoot, and hope you will continue.

Paul Grammens, Glen Ellen, Calif.

### Why not use films?

My sixth-grade class has been introduced to model-building as part of a unit on weather and space. We began by building six-inch gliders made of oak tag with balsa fuselages. All flying control surfaces were labeled and made movable so that students could become familiar with their name and function.

In this way, it was easier to see the effect of elevator or an aileron-produced roll. Later, we built 18- and 20-inch hand-launched gliders. Again oak tag was used on the stabilizer as it is cheap, available, and can be adjusted.

Your "For the Tenderfoot" articles are just the thing for beginners. There have been dozens of the rubber models made from your December issue. I duplicated the plans on the mimeograph machine and was surprised to find the demand almost equally as heavy from the girls as the boys.

Almost all these models flew well and about 25 were among the entries in a contest held in the gymnasium last Friday.

One of the big inspirational events of the program was the showing of Mr. Frank's films "The Long Flight." The film, concentrating on the building and flying of rubber models was an encouragement to those who wondered how to use paper covering, and curious how well rubber could really fly.

This brings me to think of one big question. Nearly every industry that has any product to sell has a film available to schools discussing their product and its use. These films make quite an impression on children. Why isn't the model industry taking advantage of this excellent opportunity to alert millions of youngsters and give them needed advice?

Howard Hatton, Hopatcong, N. J.

### Real aircraft

Several of us (real aircraft pilots) have decided to build a full-size glider. We wish to build a two-place powered version, but have no idea where we might obtain the plans and specifications. If you have information in this respect, please let me know.

It all started when I took my model "Baron" to the airport. It is a beautiful ship with that 8½-ft. span, and it is close to the scale of the Berguette 903. The fel-

lows have built a couple of full-size planes here at Antigo, and at the Merrill airport some time back, but now they all want a powered glider. See what a fuss a model can make.

One more comment. Your magazine is tops. I sure missed a lot in not subscribing to it years ago. It's almost impossible to get from the bookstores. I'd get it at twice the cost.

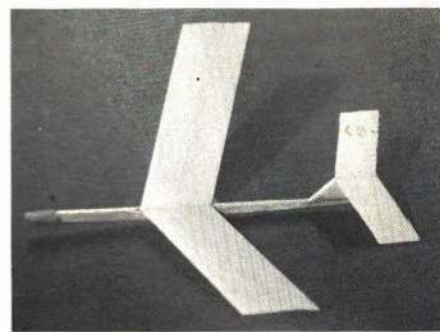
Tony Michael, Bryant, Wis.

### Mini-Glider mod

I have enclosed print of my modification of John Zaic's Mini-Glider. While the modification misses the point of John's article, it is more in keeping with what I like in a glider.

Materials will be 1/32" for the wing and stab and 1/16" for the fuselage and rudder. The 1/32" wing material to be bent to an air-foil shape per Gordan Cain indoor glider. This modification to twice or three times this size should make a good indoor glider.

John's article was excellent. I shall try his idea of Scotch tape on the tip to try to get my indoor glider to show more turn



for me. I prefer the squared-off version of the Mini-Glider. Perhaps this liking for square tips goes back to J. S. Luck's articles on model Reynolds numbers. (Or is it just plain laziness?) Also, here is a picture of my version of the John Zaic glider. It glides fast, in a left turn, but cannot be thrown. With a throw of any force it does a couple of snap rolls before settling down into its left glide.

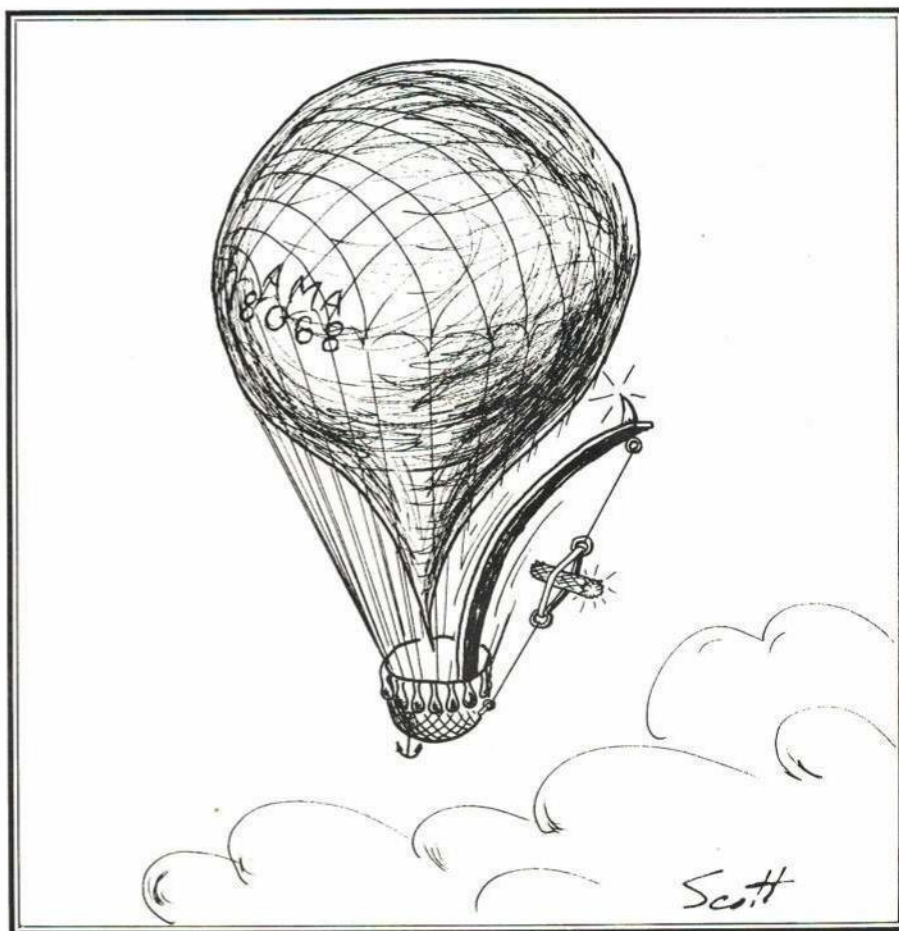
Whether this is size or design, I can't tell so the next one will be 12"-span to check the result of size on the design.

Sears B. McCarrison, Mattapan, Mass.

### More indoor models

As I'm mainly interested in R/C for summer sport flying, I am left stranded during the winter months. Some of the members of the club that I belong to have been interested in indoor for quite a number of years and it has become fairly contagious throughout our club.

Seeing that your magazine is devoted to all types of aircraft modeling, I'm not alone in begging for some indoor articles. AMA magazine seems to give aid to plastic model-builders who don't even belong to AMA, while indoor modelers who do be-





long, fail completely to get support.

I personally feel that plastic modeling doesn't require any skill except a steady paint brush.

Indoor modelers pay \$10 a year for rarely used insurance and unread magazines. Hope something will come from this besides a lot of talk.

Larry Smith, Rochester, N. Y.

AAM is equally interested in all forms of modeling. Unfortunately, indoor modelers submit perhaps one article in a two-year period. Bud Tenny's excellent article and plan on the Easy B is a fine example of what we'd like to publish. Articles are needed on techniques—for example, the making of microfilm. Whatever we publish requires dependable contributors. Scale Techniques for the Plastic Modeler was a series supplied by John Townsley; now that John is out of gas, we shall be looking for plastic model as well as indoor contributors. For that matter we required more free-flight. And control-line.

Whether or not liability insurance is required by indoor-modeler members of AMA, is a matter between AMA and its members. As long as more scientifically minded, expert modelers bury all their material in small, controlled-circulation newsletters, why expect the general, several-hundred-times-as-big magazines to be able to publish anything. It is either buried or shown to the world. Ed.

#### Editor was spoofing

I noticed in the "You Said It" column, March '69 issue, that a 1000-page issue will be introduced for \$10 a copy.

Can I order this issue directly from you? I don't think any local hobby shops or bookstores will handle this issue.

Tim Egan, Boulder, Colo.

The point was that it would take such a magazine to publish all the things every modeler demands every month—a patent impossibility. Ed.

#### Not in this category

I feel I must take issue with your March '69 editorial concerning junior participation in R/C. I agree with you on the point that we (the modelers) and industry should do something. However, I am hard-pressed to offer a solution.

I do think that your attack on the club and adult modeler was unwarranted. I don't consider advice to join a club as being "stupid." I have belonged to four different AMA-chartered clubs and none of them treated juniors with "stoney indifference." On the contrary, every effort was made to entice juniors into the sport of R/C flying.

We reduced dues, offered car pools to the flying field, supplied technical help, and in one instance, even completely outfitted a club trainer for beginners' use. Where else than the AMA-chartered club could the young modeler find a larger pool of knowledge and companionship? When you consider the insurance benefits and safety of flying on a controlled site, governed by AMA safety rules, it would be unthinkable to advise differently.

Your editorial, whether intentional or not, is a pretty low blow to the AMA, the chartered club, and individual modeler, who have been as stymied as you in solving the problem. You should reconsider and write an apology.

I have three youngsters of my own and have worked with young people in church

## Latest semi-scale R/C kit from Du-Bro Products...



## The Du-Bro CHEROKEE ARROW

for .29 to .45 engines.

Another almost-ready-to-fly R/C in the Du-Bro line... this rugged ship makes a terrific multi... handles beautifully. R/C gear mounts easily in roomy semi-scale fuselage. All parts pre-formed. Wing and stabilizer have foam cores. Servo rails and fuel tank mount are included with vacuum-formed, high impact, reinforced fuselage. Bonuses such as steerable nose gear, aileron linkage hook-up and motor mount come with this kit.

\*Does not include engine, wheels or R/C gear.

ONLY  
\$39<sup>95</sup>

**SPECIFICATIONS**  
WING SPAN: 49"  
WING CHORD: 9 1/8"  
WING AREA: 447 SQ. IN.  
LENGTH: 35 1/2"  
FLYING WEIGHT:  
4 to 4 1/2 LBS.



**DU-BRO PRODUCTS, Inc.**

480 Bonner Road, Wauconda, Illinois 60084

*American Aircraft Modeler 1969 Annual*

**NOW AVAILABLE BY MAIL-ORDER**

Just \$1.00 per copy, postpaid (\$1.25 if outside U. S. and Canada)

#### AMERICAN AIRCRAFT MODELER

733 Fifteenth Street, N. W., Washington, D. C. 20005

I've enclosed \$..... for ..... American Aircraft Modeler 1969 Annual(s).

RUSH TO .....

ADDRESS .....

CITY .....

STATE .....

ZIP .....



Order-By-Mail From America's HOBBY CENTER, 146 T West 22nd St., New York, N.Y. 10011

**America's HOBBY CENTER, 146 West 22nd St., New York . N. Y. 10011**

Nile Red, Int. Orange, 3 Rolls  
 um, Sky Blue 26' x 72' For  
 ed, Orange, Aluminum, 3 Rolls  
 Black, Ins. Blue 26' x 36' For  
 Colors: Solar Red, 3 Rolls  
 Ex.

**ENSHIP** COMPOUND  
**SE-2** RIGHT  
OF LEFT  
SINGLE  
CHAN.  
**\$7.95**

**CHARGEABLE  
PLUG  
BATTERY**

**5** DELIVERS UP TO  
5 AMPS 1.5 V.

**24  
100  
100**

**ASSORTED  
BRUSHES**

**\$3.00**

**SALE 3 For 119**  
GLO PLUGS  
No. 504 Ea.  
N AND SUPER VALUE  
SPECIFY LONG OR  
THREAD (V2 or V3)



ALUMINUM  
3 VOLT

<p><b>SOLID DECALS</b></p> <p>¢ </p> <p><b>SOLID COLORS:</b>          -BLACK-RED-GOLD-          -W-ORANGE &amp; SILVER</p>	<p><b>FULL</b></p> <p></p> <p><b>9</b></p>
---	---

<p>INSTRUMENT S. 2/15" Scale</p>  <p>29.4</p> <p>10 ASSORTED R INSTRUMENTS</p>	<p>VII WITH HALL CARRY C</p>  <p>RANGE:</p>
---	--

**ORDER BL**  
**CENTER, Inc.**

Name and description of the

---

---

---

---




Model Airplane, Radio Control

er is under \$5.00 Please  
for Postage & Packing.

**HOW TO ORDER** IN U.S. full. We accept postage stamps. We can ship C.O.D. POSTAGE ON ORDERS OF \$5.00. **OUTSIDE U.S.A.** We accept Foreign currency: Canadian(\$)-90¢; English(Pound)-23¢; etc. ADD 50¢ per total order for postage etc.

152 PAGES \$1  
GAS MODEL  
PLANE  
CONSTRUCTION  
B.B. WINSTON  
F/F, D-C PLANE  
CONSTRUCTION.  
by RAND Model LR 3  
FOR ELEVAT  
RUDDER  
THROTTLE  
FAIL SA  
ON SIGNAL O  
FREE 60WMAH  
NIPAD BATTERY  
199

 <p><b>PENCELL BATTERY</b> BOX <b>25¢</b> W 2 CELL HOLDER, POSITIVE CONTACT</p>	<p><b>FUEL FILTER</b> BY SULLIVAN</p>  <p>LARGE 35 SMALL 29</p>
--	--

<p><b>BRA-TAC</b> NDY ASE <b>495</b>  2,000 to 20,000</p>	<p><b>TUBING BENDER KIT</b>  FOR SENDING 1/ 3/32" - 1/8" 5/32" &amp; 3/8"</p>	<p><b>SPRING BENDER</b> <b>98</b> </p>
--	--	---



A. Possessions, APO or FPO: Send payment except Cash, Checks, Money Orders or unused stamps. If you send us a substantial deposit, WE PAY \$1.00 or MORE. 25¢ IF YOUR ORDER IS LESS. Foreign Currency at the current exchange Rate. U.K. (£) - \$2.40; N.Z. (\$) - 85¢; Australian (\$) - \$1.40 (for special packing, handling etc.) PLUS

**Capt. William B. Benshoof, Shaw AFB, S. C.**

B. Mallon, R. D. 1. Warwick, N. Y.

David M. Gibson, Lynn, Mass.

If your order is under \$5.00 Please  
enclose 25¢ for Postage & Packing

T-869 TOTAL

**RUSH  
ORDER  
TO**

**HOW TO ORDER IN U.S.A.** Postages, APO or FPO: Send payment in U.S. dollars. We accept Cash, Checks, Money Orders or sent by Postage stamps. We can bill you if you send a substantial order. WE CAN BILL YOU. **POSTAGE ON ORDERS OF \$5.00 or More: 25¢ IF YOUR ORDER IS LESS.** **OUTSIDE U.S.A.** We accept Foreign Currency at the current exchange Rate. Examples: Canadian \$1.50, English £1.52; N.Z. \$1.50, Australian \$1.50. **Philippine (P.) - 25¢ ADD 50¢ (for special packing, handling etc.) PLUS 10% of your total order for postage.**

MAIL TO: **THE PHILIPPINE POSTAL SERVICE**


	Total

[illegible]


TOTAL

Send payment  
to or unused U.S.  
deposit. WE PA  
YER IS LESS  
Exchange Rate  
Conversion (\$) - \$1  
etc.) PLUS







**America's HOBBY CENTER,**  
**146 West 22nd St., New York, N.Y. 10011**



**R/C PRICE QUOTATION REQUEST**

Description	List Price	AHC Discount Price


**PRINT NAME AND ADDRESS IN MARGIN BELOW**


# GREAT BUYS

## FOR MODEL BUILDERS

Order-By-Mail From America's HOBBY CENTER, 146T West 22nd St., New York, N.Y. 10011

 <p><b>U-C SPORT STUNT</b> <b>RINGMASTER</b> <i>Stunt</i> \$5.95</p>	 <p><b>FOX 35 STUNT</b> Popular all around engine <b>1199</b> Reg. \$16.95</p>	 <p><b>TEE DEE BEE</b> \$11.98 T.D. .39 \$10.99 Lee Dee .320 Lee Dee .350 Lee Dee .351 \$11.98 each</p>	 <p><b>FOX 15X</b> Reg. \$8.95 <b>SALE</b> \$6.95</p>	 <p><b>AYSC U-C SPORT</b> <b>MUSTANG</b> F-51 \$5.95</p>
 <p>ORDER FORM 8448 <b>1339</b> VALUE \$17.90</p>	 <p><b>FOX 36X</b> <b>1099</b> Reg. \$14.95</p>	<p>Medallion .049 ..... \$9.98 .09 ..... 11.98 15 ..... 14.95 15 ..... 6.98 020 Fire War ..... 5.98 049 Babe Bee ..... 5.98 049 Golden Bee ..... 6.98 049 Golden Bee ..... 6.98 15 Mark II ..... 17.98</p>	 <p><b>FOX Q7C</b> Reg. \$8.95</p>	 <p>ORDER FORM 8436 <b>1343</b> VALUE \$17.90</p>
 <p><b>COX SPORTSMAN</b> .15 BIG \$10.00 VALUE <b>5.99</b></p>	 <p><b>COX BABE BEE</b> .049 Reg. \$5.98 <b>4.49</b></p>	 <p><b>McCOY 35 CUSTOM</b> REG. \$11.95 <b>8.99</b></p>	 <p><b>McCOY 35 CUSTOM</b> REG. \$11.95 <b>8.99</b></p>	 <p><b>AYSC U-C SPORT</b> <b>MUSTANG</b> F-51 \$5.95</p>
<p>42 wing span, for 19. .35 engine are fab. parts, profile, face &amp; built up wing—very popular.</p> <p><b>McCOY .35</b> <b>CUSTOM \$11.95</b> RPM: 12,000 RPM: 15,000 RPM: 17,000 RPM: 18,000 RPM: 19,000 RPM: 20,000 RPM: 21,000 RPM: 22,000 RPM: 23,000 RPM: 24,000 RPM: 25,000 RPM: 26,000 RPM: 27,000 RPM: 28,000 RPM: 29,000 RPM: 30,000 RPM: 31,000 RPM: 32,000 RPM: 33,000 RPM: 34,000 RPM: 35,000 RPM: 36,000 RPM: 37,000 RPM: 38,000 RPM: 39,000 RPM: 40,000 RPM: 41,000 RPM: 42,000 RPM: 43,000 RPM: 44,000 RPM: 45,000 RPM: 46,000 RPM: 47,000 RPM: 48,000 RPM: 49,000 RPM: 50,000 RPM: 51,000 RPM: 52,000 RPM: 53,000 RPM: 54,000 RPM: 55,000 RPM: 56,000 RPM: 57,000 RPM: 58,000 RPM: 59,000 RPM: 60,000 RPM: 61,000 RPM: 62,000 RPM: 63,000 RPM: 64,000 RPM: 65,000 RPM: 66,000 RPM: 67,000 RPM: 68,000 RPM: 69,000 RPM: 70,000 RPM: 71,000 RPM: 72,000 RPM: 73,000 RPM: 74,000 RPM: 75,000 RPM: 76,000 RPM: 77,000 RPM: 78,000 RPM: 79,000 RPM: 80,000 RPM: 81,000 RPM: 82,000 RPM: 83,000 RPM: 84,000 RPM: 85,000 RPM: 86,000 RPM: 87,000 RPM: 88,000 RPM: 89,000 RPM: 90,000 RPM: 91,000 RPM: 92,000 RPM: 93,000 RPM: 94,000 RPM: 95,000 RPM: 96,000 RPM: 97,000 RPM: 98,000 RPM: 99,000 RPM: 100,000 RPM: 101,000 RPM: 102,000 RPM: 103,000 RPM: 104,000 RPM: 105,000 RPM: 106,000 RPM: 107,000 RPM: 108,000 RPM: 109,000 RPM: 110,000 RPM: 111,000 RPM: 112,000 RPM: 113,000 RPM: 114,000 RPM: 115,000 RPM: 116,000 RPM: 117,000 RPM: 118,000 RPM: 119,000 RPM: 120,000 RPM: 121,000 RPM: 122,000 RPM: 123,000 RPM: 124,000 RPM: 125,000 RPM: 126,000 RPM: 127,000 RPM: 128,000 RPM: 129,000 RPM: 130,000 RPM: 131,000 RPM: 132,000 RPM: 133,000 RPM: 134,000 RPM: 135,000 RPM: 136,000 RPM: 137,000 RPM: 138,000 RPM: 139,000 RPM: 140,000 RPM: 141,000 RPM: 142,000 RPM: 143,000 RPM: 144,000 RPM: 145,000 RPM: 146,000 RPM: 147,000 RPM: 148,000 RPM: 149,000 RPM: 150,000 RPM: 151,000 RPM: 152,000 RPM: 153,000 RPM: 154,000 RPM: 155,000 RPM: 156,000 RPM: 157,000 RPM: 158,000 RPM: 159,000 RPM: 160,000 RPM: 161,000 RPM: 162,000 RPM: 163,000 RPM: 164,000 RPM: 165,000 RPM: 166,000 RPM: 167,000 RPM: 168,000 RPM: 169,000 RPM: 170,000 RPM: 171,000 RPM: 172,000 RPM: 173,000 RPM: 174,000 RPM: 175,000 RPM: 176,000 RPM: 177,000 RPM: 178,000 RPM: 179,000 RPM: 180,000 RPM: 181,000 RPM: 182,000 RPM: 183,000 RPM: 184,000 RPM: 185,000 RPM: 186,000 RPM: 187,000 RPM: 188,000 RPM: 189,000 RPM: 190,000 RPM: 191,000 RPM: 192,000 RPM: 193,000 RPM: 194,000 RPM: 195,000 RPM: 196,000 RPM: 197,000 RPM: 198,000 RPM: 199,000 RPM: 200,000 RPM: 201,000 RPM: 202,000 RPM: 203,000 RPM: 204,000 RPM: 205,000 RPM: 206,000 RPM: 207,000 RPM: 208,000 R</p>				

Order-By-Mail From America's HOBBY CENTER, 146 West 22nd St., New York, N.Y.

### SCIENTIFIC

Far .020 to .074 Engines

## CONTROL-LINE

# \$3.95 EACH

18 to 24" Wingspan



Kit #2 P-40 Warhawk

No.14 Power Tri-Pacer.....	3.95
No.48 Golden Hawk.....	3.95
No.54 Casano 182.....	3.95
No.59 P-40 Flying Tiger.....	3.95
No.60 Stuka Dive Bomber.....	3.95
No.74 Messerschmidt 109.....	3.95
No.92 P-47 Thunderbolt.....	3.95
No.92 P-40 Warhawk.....	3.95
No.140 Bio-Orn.....	3.95
No.145-Extra-11C.....	3.95
No.148 Fokker D-7.....	2.95

### JOURNEYMAN/Kn, \$4.25

30" Wingspan  
by MONARCH.....14 to .13



# 389

APPRENTICE 24 SPAN  
.....074-.059 Req. 5.95

# 279

K&B  
Series 64

.....299.....	28.95
35 R C P-40.....	24.95
.....K&B.....	
.....Engines.....	

Series 60 Front Rotor

40.....28.95 40 R C.....	30.95
40.....26.95 40 R C.....	32.95

K&B 35 R C.....23.95  
K&B 43 R C.....27.95

### REARWIN SPEEDSTER

34" Span  
Price



# 795

Far .09 to .19 Engine  
For 049-19 Engine

Model Aerodynamics Year Books  
by Frank Zorc

# 1937 250

1938 Year Book.....\$3.00  
1955-56 Year Book.....3.00  
1957-58 Year Book.....3.00  
Model Glider Design.....3.00  
Huffman's Model Aero.....2.00

### WHIPSAW

31" Span



# 395

Far .09 to .19 Engine  
Pupils. Pre-fabricated kit with wing. Pre-fabricated kit

### RINGMASTER 42" span

For 19-35  
by Sterling

# 595

Baby Ringmaster.....\$2.95  
Ringmaster Jr.....3.95  
Ringmaster Sportster.....3.95  
Super Ringmaster 42.....4.25  
Imperial Ringmaster S2.....11.95

### STERLING RUBBER POWERED MODELS

A1 Fokker D-7 24".....	3.98
A2 Stearman PT-17 20".....	5.98
A3 Beech Bonanza 22".....	2.98
A4 Thunderbolt P-47 22 1/2".....	4.98
A5 Mustang 17 3/4".....	2.98
A6 Stuka Bomber 20".....	2.49
A7 Piper Super Cub 18 1/2".....	4.98
A8 Messerschmidt 109.....	3.98
A9 Texan AT-6 18".....	3.98
A10 Mustang P-51 16".....	4.98
A11 Cessna 180 17".....	1.49
A12 Biwa 42" 19-17 1/2".....	1.49
A13 P-40 Flying Tiger 16".....	3.95
A14 P-40 Flying Tiger 24".....	3.98
A15 F4U S-4 Foxbat 24".....	3.98
A16 Zero C-40 24".....	3.98
A17 P-51 S-4 22".....	2.98
A18 Anadol SV45 19".....	2.98
A19 Spitfire 17 1/2".....	2.98
A20 Focke Wulf 190 24".....	3.98
A21 Spit XIII C-64.....	2.98
A22 Spit XIII C-64.....	2.98
A23 Eimböcker E-3 25".....	2.98

Order-By-Mail From America's HOBBY CENTER, 146 West 22nd St., New York , N.Y.

 <h3>CIRCULAR AIRFLOW</h3> by Frank Zacc <b>\$3.00</b> <p>1984-85 Civil Yearbook... 4.95 Model Aircraft Handbook... 3.00 Power Model Boats... 2.95 Boat Modelling... 2.95 Flying Scale Models... 2.95 Water Plane Building A-Z... 2.00 The Best of Wylon No.1... 2.00 The Best of Wylon No.2... 2.00 Decade of Design No.2... 2.00</p> <p>Model Aero Engine Catalogue... 3.00 Aircraft Annual... 1.95 Warplanes of the World... 1.95 Aircraft in Manufacture... 1.95 Circular Airflow... 3.00</p>	<h3>ENGINE TRADE IN</h3> <p>We meet all COMPETITION!! If any one advertises a higher trade-in allowance in this magazine we will send it to our N.Y. Office with your order. Your old Engine = worth 25% of its current value at sale! Only one engine accepted per order... carry only 10% off on Special SALE merchandise &amp; R.C. equipment... if in doubt send payment in full and we will return the balance.</p> <h3>BEGINNERS \$1.95</h3> <p>F1, D49 Engine</p>	<h3>PLASTIC HANDLES</h3> <p>EZ Just</p> <p><b>\$1.25 EACH</b></p> <p>*Harc Rock *S Standard</p> <p>We stock plans from all sources. Write for complete list: M.A.N. Wylom plan set Wagon Camel Wylom model ASD SE SA W2-Sand X-LT11 C1 Spd W-L11, Guntur 4 Light Kit W-Curt, P1 Hawk, F11C-2 Gushawks &amp; C-45 die W4 Rep-P, D49, Spitfire 2 Mess. Me-109J Pad-D W5 Grum. F4P-3 C-34-A-26 B-17-A-26 B-24 Liberator F-1 P.B.V. B-29 C-97AB-26 W7 AJR-66 W8 Lockheed Hudson, Waco C-4 &amp; C-4 FFP-126 Bell Aircraft</p>	<h3>ENGLISH BOOKS</h3> <p>Aero-modeling Date Book... 1.00 Aero Annual 1983-84... 3.50 Control Line Manual... 1.00 Choosing Your Engine... 1.00 Flying Scale Models... 2.00 Model Engine Tests... .30 Multi Channel R.C. Control... .30 Radio Control Manual II... .30</p> <p>Plan Books No 1 (complete)... 1.00 No 2 (partial)... .50 No 3 (plans)... .50 No 3 (pieces)... .50</p> <p>Dummies <b>\$5.25</b></p> <p>F-2 Sixou F.1 Dakota .048... 5.25 F.2 Sixou .048... 5.25 F.10 Taylor Cut .048... 5.25</p>	<h3>AMERICA'S HOBBY CENTER PLANS</h3> <h3>YOUR CHOICE 50¢ EA.</h3> <p>Rubber Models Shirous L.S.33 Span... 1.00 F-51 Mustang, 25 Span... 1.00 Mustang, vester, 25 Span... 1.00 Steanton 75 Trainer, 18 Span... 1.00</p> <p>Free Flight Models Skinner P-51 Mustang, 25 Span... 1.00 Super Simplex, 51 Span... 1.00 Scale U-Control Models Master Mustang, 37½ Span... 1.00 Castle Swan Pea, 26 Span... 1.00 Knight Twister, 22½ Span... 1.00 Vernon Bomber, 22½ Span... 1.00 Leigher Spectral, 28 Span... 1.00 Capt. Page Navy Recor., 31 Span... 1.00 Lockheed, 28 Span... 1.00</p> <h3>YOUR CHOICE 3 for \$39</h3>
--	--	---	--	--

[illegible]

Order-By-Mail From America's HOBBY CENTER, 146 T West 22nd St., New York, N.Y. 10011





# ***Pusher Galore***

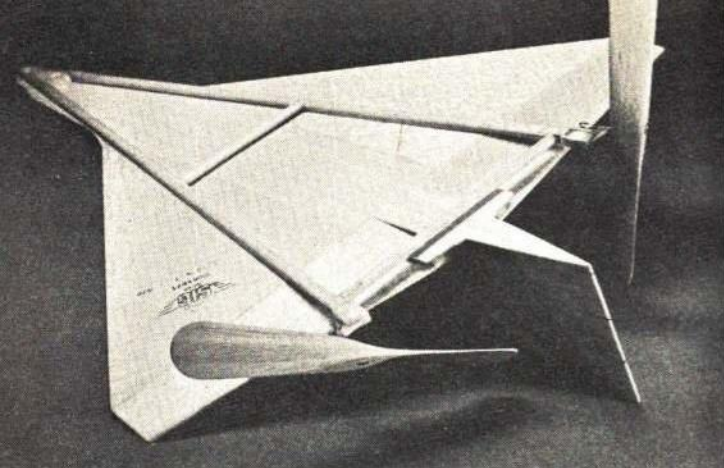
Build your own SST for long-distance flights. Uses a 1910 A-frame twin-pusher and a double-delta wing.

Modified egg-beater simplifies winding by giving equal number of opposite turns to the motors. When launching, release props simultaneously and push forward. By unequal winding or release, you control flight direction.

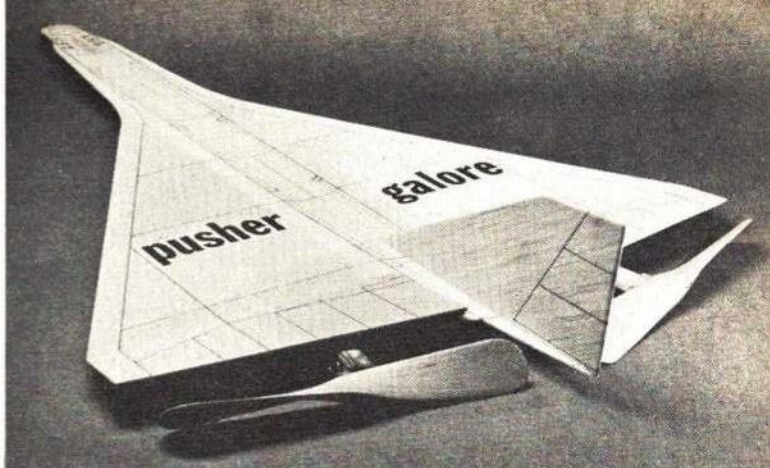
**BILL HANNAN**







Plastic prop bearings are used. Elevator is shimmed.



Sand wing before gluing to frame. Decorate with ball-point pen.

PUSHER Galore represents an interesting paradox, since the top view is that of an ultra-modern supersonic transport, while the flip-side reveals a chassis reminiscent of 1910! Essentially, we have superimposed a double-delta platform on a vintage twin-pusher A-frame. The result is an exceptionally easy-to-build aircraft that is certain to attract attention wherever it is flown.

Before we settle down to the actual construction, it may be of interest to examine the concept of the double-delta more closely. During the initial planning phases for their proposed SST, Lockheed scientists and engineers investigated a large variety of basic layouts, including arrow wings, variable—sweep wings, and canards, before choosing the double-delta configuration. This platform was selected as being the simplest design capable of fulfilling the anticipated requirements. Wind tunnel tests demonstrated that the double-delta could provide very favorable low-speed aerodynamic characteristics even at extremely high angles of attack, without the need for the structural and mechanical complexities that would be imposed by a swing-wing design. A study of the Lockheed engineering reports, led to the creation of our Pusher Galore, which resembles the Lockheed design (at least from the top!), except for the nose, which has been rounded off for safety reasons.

**Construction:** The basic A-frame structure is made from  $\frac{1}{4}$ " square medium-hard balsa strip, which has been selected for stiffness and straightness. The forward end of each member is cut at an angle, as shown on the drawing, then glued and bound with strong thread. This, by the way, was standard practice on the old twin-pushers. Next, cut the cross-pieces to size, and pin and glue them in place. Be generous with the glue at all intersections, since they will be subject to strain under full winds of the rubber motors.

The propeller bearing blocks are cut from  $\frac{1}{4} \times \frac{3}{8}$ " rock-hard strip balsa stock, which is drilled to accept  $\frac{1}{16}$ " diameter metal tubing bearings. The tubing should be roughened on the exterior wall, coated liberally with Ambroid or epoxy, and installed.

Be certain to remove any glue that may find its way into the inside of the tubing. The bearing blocks may then be glued and bound to the outer ends of the A-frame structure. As an alternative scheme, you may cut down the thickness of the A-frame members at the rear, and utilize the plastic bearing assemblies from ready-to-fly ROG models, such as the North Pacific "Sleek Streak."

Bind the forward rubber-motor hooks from a piece of  $\frac{1}{32}$ " diameter music wire, and glue and bind in place. Though not

strictly necessary, the A-frame members may now be sanded to half-round contour, to streamline, reduce weight, and add to workmanlike appearance.

**Wing:** The wing is made from fairly light  $\frac{1}{16}$ " sheet balsa, edge-glued to make up the necessary size. Obviously, the desired result can be achieved with other patterns of joints, but the method shown on the plans has proven quite warp-resistant, and can utilize 3"-wide sheets. Note that the elevons overlap the trailing edge "tabs" of the wing center-section, and are glued initially only at their leading edges. During flight testing, small balsa shims will be inserted between the elevons and center-section tabs to increase the upward deflection as needed.

**Propellers:** Don't be afraid to tackle construction of the pair of props for this bird, because we have used a method that is simple enough to be carried out by even a young child! While "serious" modelers may look at this sort of airscrew with raised eyebrows, the fact remains that these rather crude appearing props really do the job. Each prop is constructed from eight  $\frac{1}{16}$ " thick  $\times \frac{1}{4}$ " wide  $\times 5\frac{1}{2}$ " long, hard balsa strips. Each strip is punctured at its exact center with a straight pin, and then all eight strips are stacked in a pile, using the straight pin as an alignment guide. Put a layer of glue between each mating strip, fan them out as shown on the drawing, and set aside to dry, preferably overnight. **Caution:** Be sure to make one left-hand and one right-hand prop blank, unless you want your SST to do snap-rolls. After the funny-looking stacks of sticks have dried, they may be carved and sanded to finished shape. After rounding the tips, give each prop two or three coats of clear dope, sanding between coats. Presto! They may be ugly, but they work. Bend a pair of prop hooks from  $\frac{1}{32}$ " diameter music wire, add a couple of thrust washers, and install.

**Vertical fin:** Cut the vertical fin-rudder from a piece of  $\frac{1}{16}$ " sheet balsa. The shape is not the least bit critical, so if you feel creative, design your own.

**Assembly:** Glue the wing assembly on the A-frame being careful to center it exactly—with that much gluing area, it would be awfully difficult to shift later. A number of small weights or clamps are useful to hold the wing in place until the glue dries. Next, add the vertical fin, being cautious that it is correctly centered.

**Decor:** Well gang, the hard work is over, and if you want to, you can head for the flying field. However, why not invest one more half-hour, and add a little esthetic appeal to your SST? With the aid of a straight edge, a French curve, and a fine-line marking pen, you can really enhance the appearance. You may use our drawings

and photos as a guide, or use your own imagination. One effective approach is to apply colored tissue markings, using clear dope as an adhesive. A couple of light spray coats of clear dope will protect your markings from moisture, but go easy, so as not to encourage warps.

**Flying:** Make up two rubber motors, each consisting of four strands (two loops) of  $\frac{1}{8}$ " flat rubber. With the rubber in place, check the model for balance. Add modeling clay until the balance point is about where shown on the plan. The elevons should be raised by means of balsa shims to about  $\frac{1}{8}$ ", as measured at the inboard trailing edges. Give each propeller a few hand winds, and try a power glide, releasing the model in a level attitude. The SST will probably nose up or down rather suddenly the first time. If it noses up, add a small amount of clay to the nose, inside the junction of the A-frame. If it noses down, insert thicker balsa shims to raise the elevons slightly. Once you have established a reasonably flat power-glide pattern, try about 100 turns in each side and try again.

**Launching technique:** This can best be seen from our photos. The object is to release both props simultaneously, while giving the model a good push. The launch angle is fairly critical. If too steep, the model will stall. If too shallow, the model may fly into the ground under full power, which really makes the splinters fly. Although Pusher Galore is rather stall-resistant, it is by no means stall-proof, as once an extreme nose-up attitude is reached, the elevons are completely blanked-out by the wing, and can't contribute to recovery. Therefore, the idea is to avoid stalling in the first place. If the model exhibits excessive turning tendencies, don't fiddle with the rudder, but instead, bias one propeller by giving it a few extra turns. Using this system, it is a simple matter to steer the model right, left, or straight ahead. (In the old days, most contests were held for distance rather than duration, and twin-pushers usually won, because they could be made to fly in a straight line.)

**Winding:** Although the model may be wound one side at a time with a winder or by hand, it is much easier to use a twin-winder. Unless you are lucky enough to have a genuine antique in your attic, you will probably have to make one. This is done by reworking an egg-beater, which can be cheaply obtained at a dime store. Simply remove the beaters, and replace them with hooks, being careful to attach them strongly in order to withstand the pull during winding.

So there you have it, cloudsters. Why not build Pusher Galore and be the first in your neighborhood to fly an SST!



NOTE: THE TRAILING EDGE OF BOTH ELEVATORS (ELEVONS) SHOULD BE RAISED ABOUT 1/8" BY INSERTING BALSA WOOD WEDGES AT THIS POINT. AFTER A SATISFACTORY FLIGHT PATTERN HAS BEEN ACHIEVED, THE WEDGES ARE GLUED IN.

POSITION OF PROPELLER ON FINISHED MODEL

BALANCE  
POINT

1/32" DIA.  
MUSIC WIRE  
NOSE HOOK

BIND WITH  
THREAD  
AND GLUE

1/16" SHEET BALSA

archaic  
airlines

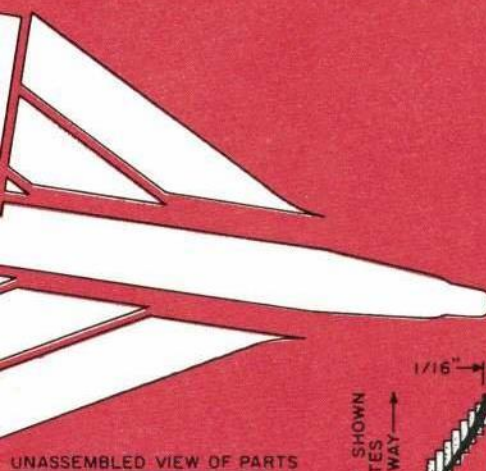
DESIGNED & DRAWN  
BY W.C. HANNAN  
1968

THE  
PUSHER  
GALORE SST

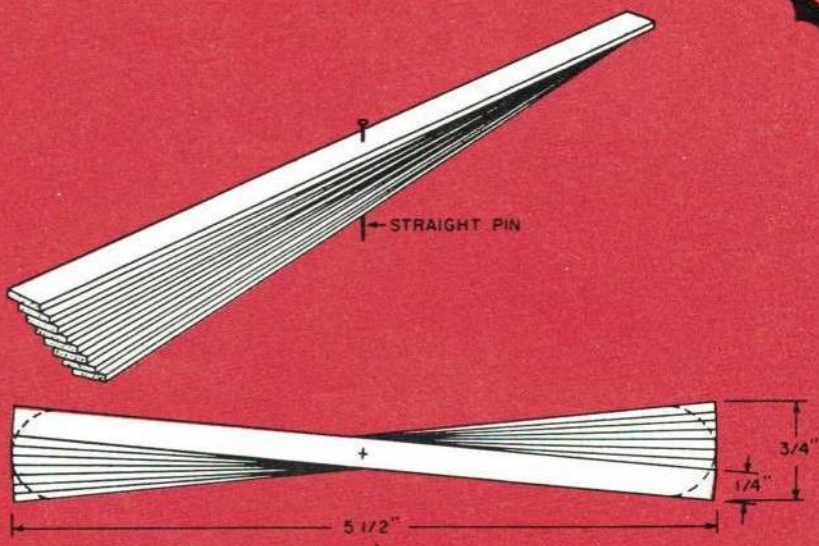
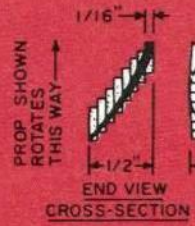
pusher

galore



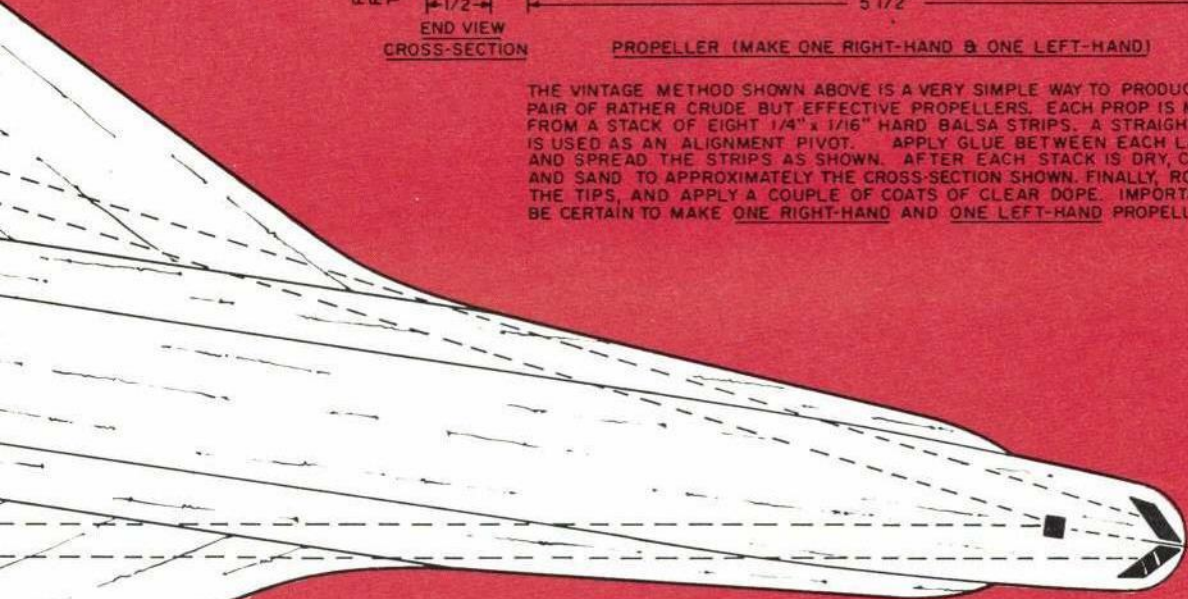


UNASSEMBLED VIEW OF PARTS

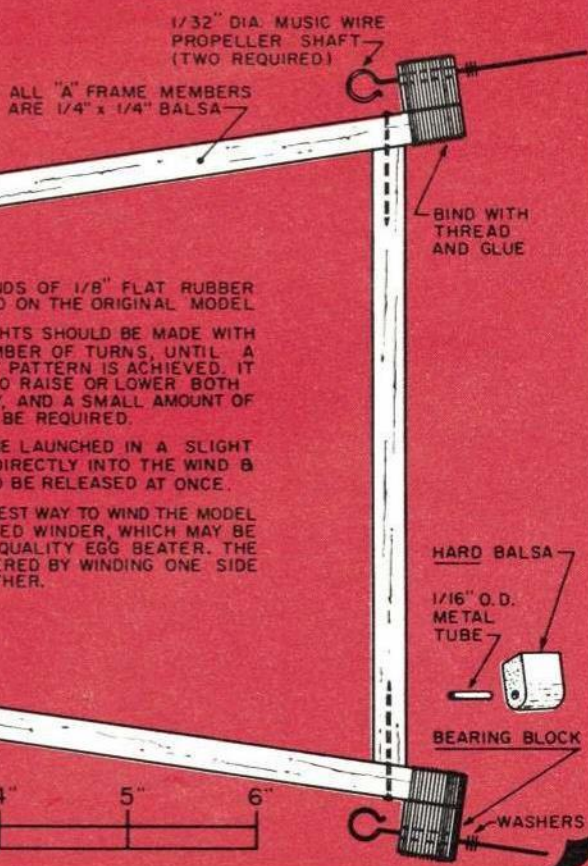


PROPELLER (MAKE ONE RIGHT-HAND & ONE LEFT-HAND)

THE VINTAGE METHOD SHOWN ABOVE IS A VERY SIMPLE WAY TO PRODUCE A PAIR OF RATHER CRUDE BUT EFFECTIVE PROPELLERS. EACH PROP IS MADE FROM A STACK OF EIGHT 1/4" x 1/16" HARD BALSA STRIPS. A STRAIGHT PIN IS USED AS AN ALIGNMENT PIVOT. APPLY GLUE BETWEEN EACH LAYER AND SPREAD THE STRIPS AS SHOWN. AFTER EACH STACK IS DRY, CARVE AND SAND TO APPROXIMATELY THE CROSS-SECTION SHOWN. FINALLY, ROUND THE TIPS, AND APPLY A COUPLE OF COATS OF CLEAR DOPE. IMPORTANT! BE CERTAIN TO MAKE ONE RIGHT-HAND AND ONE LEFT-HAND PROPELLER!!



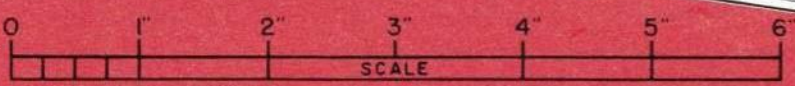
ENTIRE "WING" IS MADE FROM 1/16" SHEET BALSA



FLYING: FOUR STRANDS OF 1/8" FLAT RUBBER PER SIDE WERE USED ON THE ORIGINAL MODEL. THE FIRST FEW FLIGHTS SHOULD BE MADE WITH ONLY A LIMITED NUMBER OF TURNS, UNTIL A SATISFACTORY FLIGHT PATTERN IS ACHIEVED. IT MAY BE NECESSARY TO RAISE OR LOWER BOTH ELEVATORS SLIGHTLY, AND A SMALL AMOUNT OF NOSE BALLAST MAY BE REQUIRED. THE MODEL SHOULD BE LAUNCHED IN A SLIGHT NOSE-UP ATTITUDE DIRECTLY INTO THE WIND & BOTH PROPS SHOULD BE RELEASED AT ONCE. THE EASIEST & FASTEST WAY TO WIND THE MODEL IS WITH A TWIN-HOOKED WINDER, WHICH MAY BE MADE FROM A GOOD QUALITY EGG BEATER. THE MODEL MAY BE STEERED BY WINDING ONE SIDE MORE THAN THE OTHER.



CROSS-SECTION "A" FRAME MEMBER (SAND TO SHAPE AFTER "A" FRAME IS CONSTRUCTED)



SCALE



'positively the thing will never fly...'



# Miracle at LeMans

In 1908 Wilbur Wright went to France to prove that he and his brothers were not fakers. His flights shook the world.

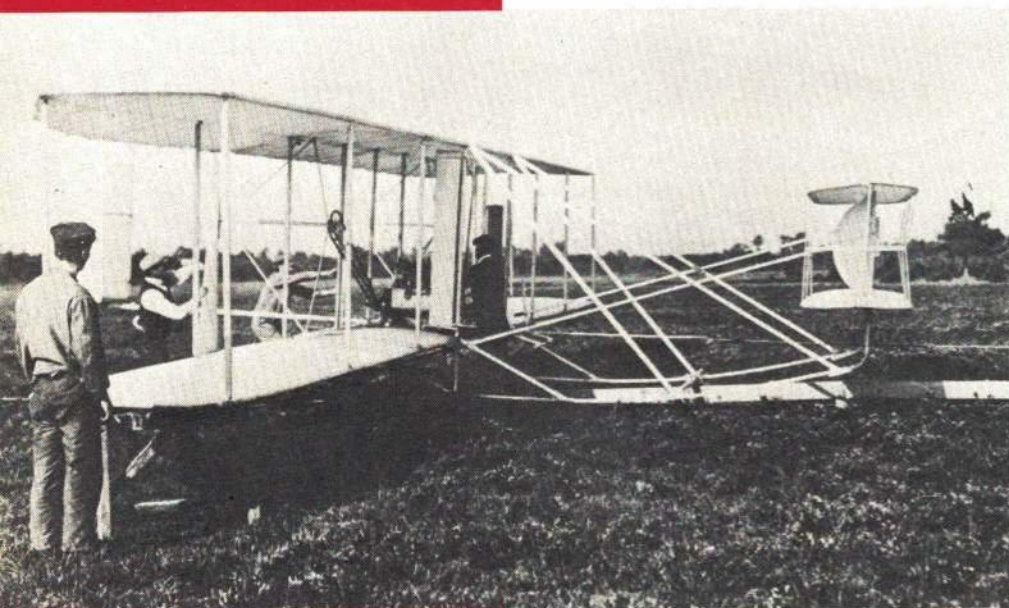
**DOUGLAS J. INGELLS**

WHEN the 9,000-ton French liner, *Touraine*, docked in the fog at Le Harve, France on Friday, May 29, 1908, an American, Wilbur Wright, co-inventor of the airplane, walked unnoticed down the gangplank. In a short time, he would become the idol of all Europe, of the world for that matter.

A French syndicate was interested in forming a new company to manufacture the Wright Brothers' biplanes on the Continent. The deal involved almost a quarter of a million dollars.

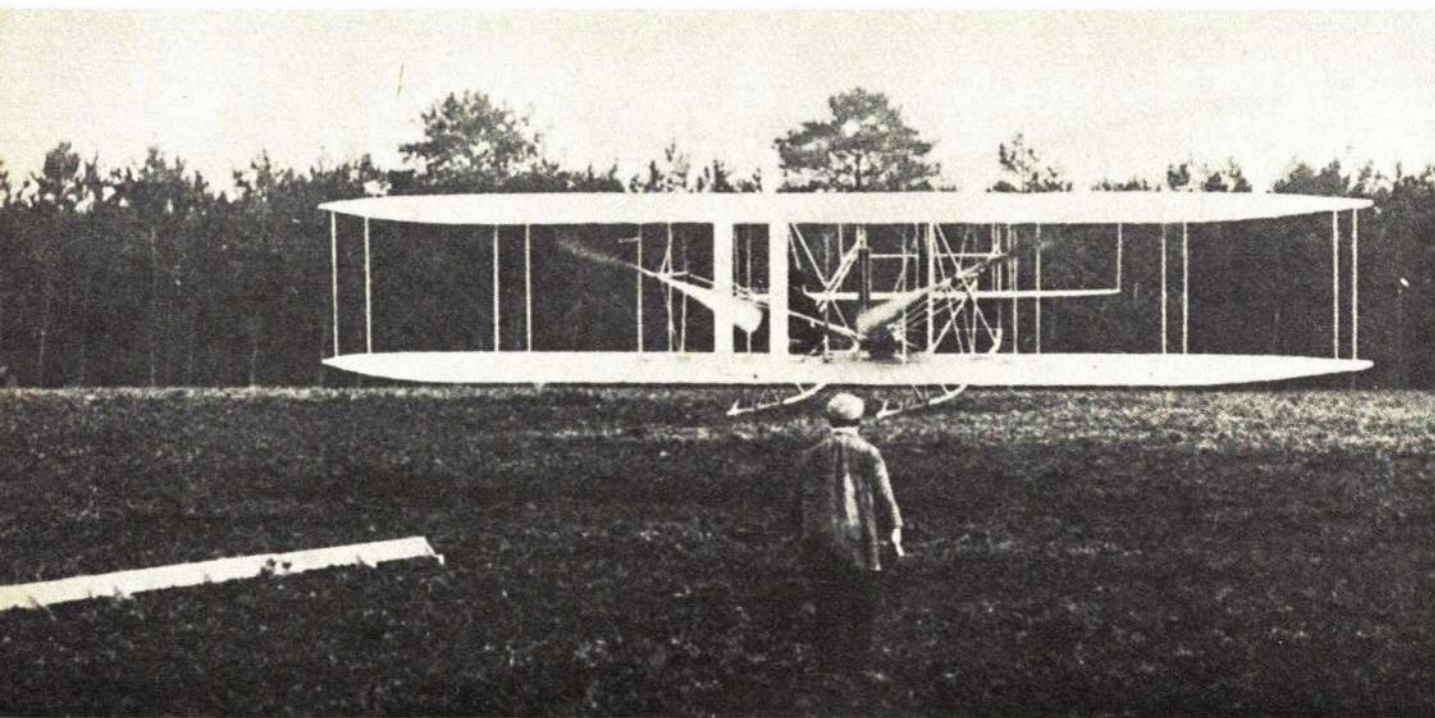
There was only one thing holding up final arrangements. Could the Wright machine perform the way its inventors claimed? Or, was it "le grande bluff," as some Paris newspapers had headlined? Wilbur was in France to prove that they were *flyers*, not *liars*!

He went directly from the southern seaport city to Paris, where he met M. Hart O. Berg, the Wrights' European business representative. Berg had some disturbing news. The bankers were losing interest in light of the recent flights made by Henri Farman, Santos Dumont, Leon DeLagrange, Louis Bleriot, and others who were thrilling all France with their flying exhibitions. National pride was swelling like the ocean tide. History would say France had conquered the air with the airplane, the same as her famous Montgolfier Brothers had won the sky when they invented the bal-



Time-honored aircraft-engine starting is by flipping the prop(s). Launching system of rail and catapult assist was unique to the Wrights; French flyers used just wheels.





Takeoff from infield of Hunaudières race track was directly toward nearby trees. Unlike French airplanes, the American machine had good directional control and stability.

loon in 1783. But so much for history! Who were the Wright Brothers? Where was their machine? Frenchmen had only read stories about the fact that the two brothers had flown successfully in a heavier-than-air flying machine at an isolated place called Kitty Hawk, North Carolina on Dec. 17, 1903.

But that was five years ago, and 5,000 miles away. And it was true that even their own countrymen had refused to believe the Wrights' accomplishments. The American public did not accept the airplane as anything but a fantasy. Even the Wright Brothers' hometown newspaper had carried only a small item about the great event at Kitty Hawk; and that news item said the two inventors had simply emulated the flights of the famous Brazilian aeronaut, Santos Dumont in France. Furthermore, the War Department in Washington had turned down the Wright machine because it didn't believe such a machine was in existence!

Naturally, M. Berg was concerned. Why, only ten days before, the great Farman had made a flight of more than a mile in his machine at Issy, France, after which he had challenged the Wrights publicly to a flying contest, personally offering \$5,000 to the winner. Then too, Louis Bleriot was already saying around the Aero Club in Paris that he was making plans to fly his monoplane across the English Channel next year. The Wright airplane would have to be something extraordinary, little short of miraculous, to beat the performances of France's own.

Wilbur admitted the Frenchmen had made great progress. But, he pointed out, there was one big difference—the French aviators so far had flown only in a straight line. Their machines were unstable in the turn, and they lacked controllability. They simply weren't practical vehicles of the air. More important, to achieve the desired control characteristics, the Frenchmen and all others would have to copy the Wrights' patented control features!

M. Berg was impressed, his spirits revived. But how soon would Wilbur be ready to fly?

Well, first, they would have to find a suitable "cow pasture" for takeoffs and

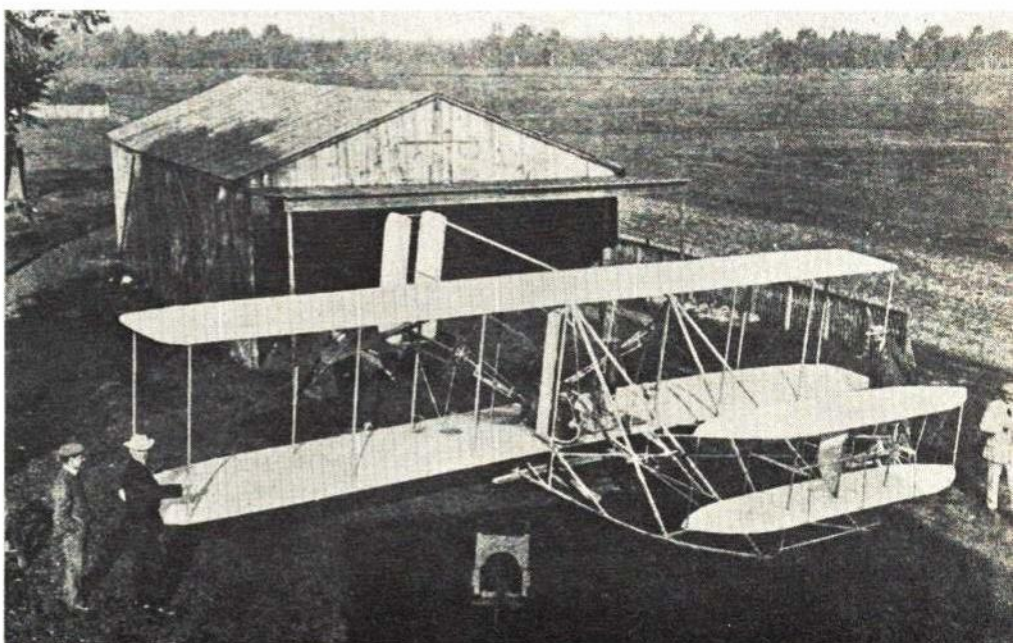
landings, Wilbur told him. Then, as soon as he could get the machine out of its boxes and assemble it, he would turn the fantasy into fact before ten thousand eyes!

For the next several days, they toured the countryside looking for a suitable flying field, but with little success. Even the so-called "aerodromes" that Farman and Bleriot were using at Issy and Sartrouville and which the two Frenchmen graciously offered to their fellow birdman, Wilbur did not find acceptable. This only led to growing skepticism.

It was M. Leon Bollee, the famous French automobile manufacturer and designer, who finally came to the rescue. He had read in the papers of Wilbur's quest and

he offered the latter the use of the shops at his factory in Le Mans, about 125 miles from Paris, where the plane could be assembled. M. Bollee also said that he believed there were grounds nearby which would be acceptable for flight operations.

When he saw the Bollee factory, Wilbur immediately decided to take advantage of the shop facilities. He was equally impressed with two sites in the vicinity. One was the artillery test range at Camp d'Auvours. The other was the oval-shaped infield of the race track at Hunaudières. The Auvours location was ideal, but the French War Ministry refused permission to use it because they were running big gun-tests at the time. M. Nicolai, owner of the race



Wright machine beside the race track at Le Mans. Can anyone explain the reason for one forward vertical surface between biplane horizontal stabilizers, instead of two?



track and president of the Jockey Club of Paris, however, said he would be delighted to let the American flyer set up his base there. Berg rented the race course for a fixed monthly fee and a percentage of the gate, if they should choose to charge admissions for the exhibitions.

The plane was shipped by train from Le Harve to the Bollee factory and arrived there on Tuesday, June 17. When Wilbur opened the boxes, he found things inside — "resembling a rattler in a foundry." A dozen of the wing ribs were broken. The linen fabric covering was torn in several places. The radiators were smashed. Part of the seat was broken. A lot of small parts were missing.

It was a week before he and a mechanic, who could understand a little English, but speak less, could effect the necessary repairs and mending. Damp weather complicated the work because it shrunk the fabric wing covering so the cloth could barely be stretched over the framework structure. At one time, when he built a fire pot under the wings to dry them out, Wilbur almost burned up the whole place. In addition, he had to machine the lost parts which could not be found in any of the local hardware establishments.

Wilbur had other troubles, too. Both the Wrights had been in Europe the year before and they had brought the plane over with them. But they never took it out of the crates because negotiations had bogged down. They had, however, taken the engine to the French firm of Bariquand and Marre to build a copy and make certain improvements. Now, when Wilbur went to Bariquands to inspect the engine, he found they had not finished the new engine, and they had practically ruined the original. It took days to get the American engine running properly.

By the time he had the machine itself in shape, the engine mounted and the propellers geared up, it was the end of July. Things would have moved faster except that Wilbur suffered a painful injury on the Fourth of July when he was running up the engine to test its speed. The rubber hose on the radiator broke and a spout of boiling water scalded him, raising a

blister a foot long on his arm and another of equal size on his side. He couldn't possibly fly until the pain and the stiffness were gone.

During his recovery period, Wilbur supervised the final assembly of the machine and the moving of it from the factory to a temporary shed which had been built at the race track. At the same time, work progressed in preparing the launching device which the Wrights used for takeoffs. This was a technique entirely different from anything the French had ever seen.

The Wright airplane did not take off from the ground properly, but rather from a launching rail and with the assistance of a catapult device. It did not have wheels for its undercarriage like the French machines. The landing gear consisted of runners or skids. The plane rested on a small dolly which ran along a monorail track. The track, wooden 2 x 4's standing on edge and shod with metal, was laid in a straight line heading into the prevailing wind direction. In addition, there was a tower about 25 feet high with a heavy weight attached to the plane itself by a system of pulleys and ropes. The operator triggered a release mechanism that dropped the weight which, in turn, yanked the machine forward, complementing the thrust forces of its propellers. Thus, the machine gained more momentum during the crucial takeoff run. At the same time, the track helped the operator to maintain a straight course into the wind, taking full advantage of the air itself to provide lift for the wings.

Finally, with his arm healing, but still heavily bandaged and a little stiff, and the machine and the launching device in readiness, Wilbur announced on Friday, Aug. 7, that he would make a flight the next day. This was his answer to barbed editorials which had been appearing almost daily, interpreting the delays as "stalling."

Since Wilbur had a cot and living quarters, crude but efficient, right in the shed at the race track, he was up early on Saturday making a final check and last-minute adjustments. Testing the engine, it started to act up, sputtering and overheating. But rather than postpone the test, he decided to risk it anyway. Mak-

ing a couple of taxi runs down the track with the propellers racing at slow rpm, he found everything working satisfactorily.

Surveying the ground again, however, he displayed some anxiety when he remarked to M. Berg that the "trees are awful close." He explained he would have to make a quick, and very tricky turn to avoid them.

Neither of the Wrights had flown in such a restricted area. There was plenty of space at Kitty Hawk and at Huffman Prairie near Dayton where they had made all their previous flights. But then, he was banking on the machine's capability to make sharp turns, its inherent controllability, to impress the French.

By noon, there was another disturbing development. It was a bright, clear day, ideal temperature, but suddenly, the wind started blowing in spasmodic gusts of 10 to 15 miles per hour. And it was blowing from the wrong direction, crosswind to the monorail track. If it kept up like this, he would have to call the whole show off. It would be too dangerous to fly in such a high wind.

Since the flight had been highly publicized, a large crowd had gathered, more to witness a failure than see a success. Hundreds had come to see what they did not believe.

High ranking military officers were there, including General M. G. Picquart, the French Minister of War, Commandant Henri Bonel of the Engineering Corps and Captain Louis Ferber, a glider pioneer and a strong advocate in favor of the French Army buying the Wright machine. Also present were prominent members of the Aero Club of France. Among them was Frank S. Lahm, the balloonist and a native of Mansfield, Ohio, who had been living in Paris, and who was chiefly responsible for stirring up interest in the Wright machine as far back as the spring of 1905. It was Lahm, in fact, who had verified reports of the Kitty Hawk flight for the Aero Club, which previously had sluffed off the event as a fraudulent claim.

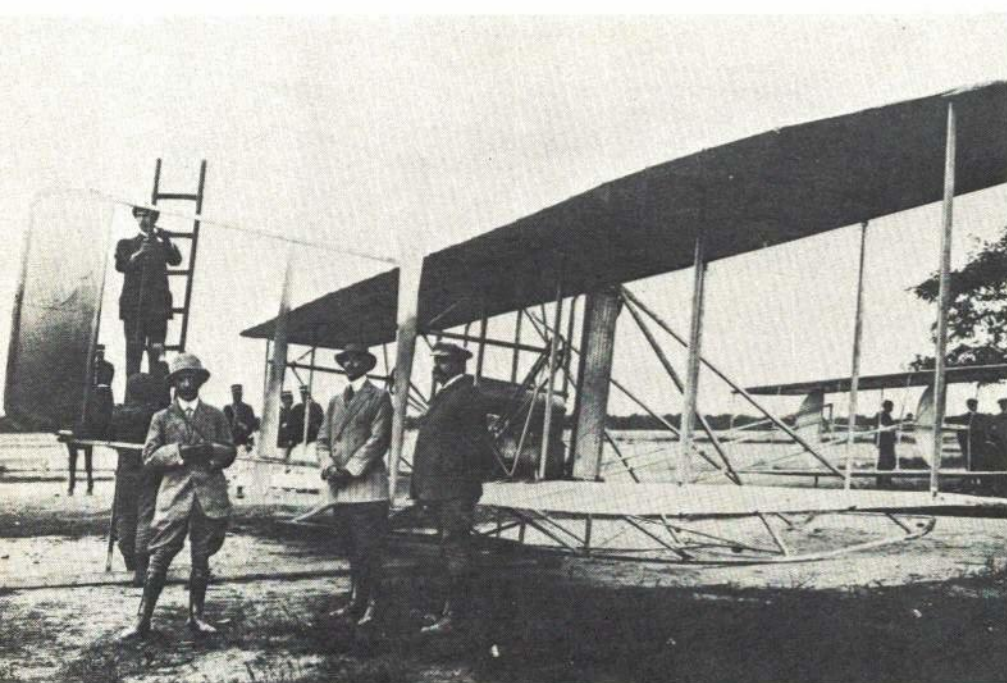
Newspapermen were all over the grounds. Probably the most prominent of the press representatives was M. Henri Letellier, publisher of the *Le Journal* of Paris. His interest was more than just that of covering the news event; he was one of the principal backers of the syndicate. Naturally, Bleriot, Farman, Delagrange, and the other aviators had come to see their competition.

Wilbur didn't pay much attention to any of the distinguished spectators, except to greet them cordially. He was too busy with the machine and too worried about the wind conditions. Another concern was keeping the spectators off the infield, away from the machine and its launching mechanism. He didn't want anybody to get hurt.

By one o'clock, the grandstand was black with people. There was much betting, as though they had come to see a horse race. The odds were as high as five-to-one that Wilbur would fail to equal the performance of France's heroes. The delays, due to the wind, which still came in gusts, made the crowd restless and fired its skepticism.

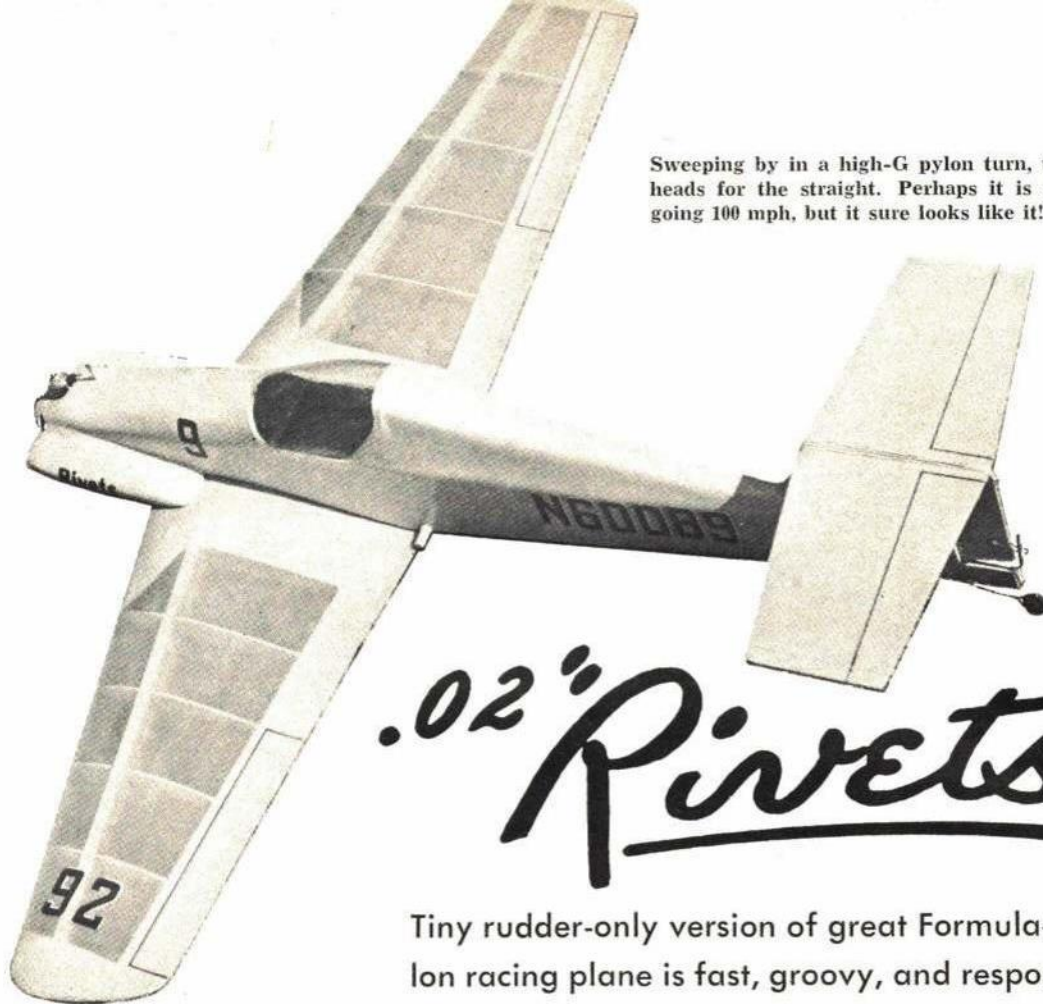
The machine itself, of course, was the focal point of attention. It was a biplane, one wing above the other. The wing span measured about 36 feet. The engine was a gasoline, piston-type, developing about 25 horsepower. It was mounted in the center section of the lower wing. It drove two wide-blade pusher-type propellers made of wood. It was linked to the drive shaft by a chain-drive mechanism similar to the way a bicycle's wheels operate. The body was a skeleton framework of spruce and metal, struts and wires. It measured about 32 feet

*Continued on page 74*



Wilbur adjusting rudders from ladder. Although quite heavy, this is the first practical and efficient flying machine. Note twin forward vertical surfaces.





Sweeping by in a high-G pylon turn, the Rivets heads for the straight. Perhaps it is not really going 100 mph, but it sure looks like it!

# *.02" Rivets"*

Tiny rudder-only version of great Formula-1 pylon racing plane is fast, groovy, and responsive.

## OWEN KAMPEN

THINK small! Until recently the size of an R/C model was dictated by the size and weight of its electronic payload. Now with the availability of systems in the 3-ounce or less range, many small models are possible. Rivets is one. True to its prototype, it is small in size but not in performance. It's a mover, fast and responsive, not for slow reflexes and definitely not for the novice.

In this day of big displacement engines, the tiny Cox T.D. 02 powerhouse tends to be regarded as a cute novelty. Don't be misled for this engine-airframe combination can create plenty of excitement on rudder only. While fast, it is also honest, a groover

in the turns, with a flat power-off glide when properly trimmed and balanced.

When designing small planes I have tended to avoid a low-wing configuration for rudder-only use as the need for excessive dihedral tends to destroy scale-like appearance. Being aware of the fact that a sharply raked-back leading edge contributes to dihedral effect I have long considered Rivets as a possible answer.

The T-tail effect was also something I wished to learn more about. It seemed ideal for permitting uninterrupted airflow to the rudder, rather important when that's all you've got. Flight performance has borne this out as this little one really reacts to a command.

Not wanting to re-invent the wheel, use was made of many photos and drawings,

and a special kudo is due Joe Foster for his unknowing contribution. The small one was completed shortly before the '68 Mid-winter Toledo Conference and there received considerable interest from spectators and judges alike.

Surrounded by large ambitious projects, the little Rivets seemed lost but before long it became apparent that it possessed a special appeal. For reasons still not clear, everyone wanted to touch—pet—bounce and hold it. I had thoughts of renaming it "CUDDLES."

Rivets claimed a victory and came home with an award half as large as itself and all was well except for a nagging doubt. Would the cute thing fly? Well, it almost didn't.

Early attempts with Dick Adams at the controls were borderline at best and at times almost disastrous. Behavior was erratic and at least 150 feet were necessary for recovery from steep spiral dives. One session was enough and Rivets was retired to a hook on the wall—head down in disgrace. I salvaged my damaged pride with the philosophical observation that "you can't win 'em all." It was Rivets' first defeat. For several weeks other projects took priority and Rivets was allowed to gather dust.

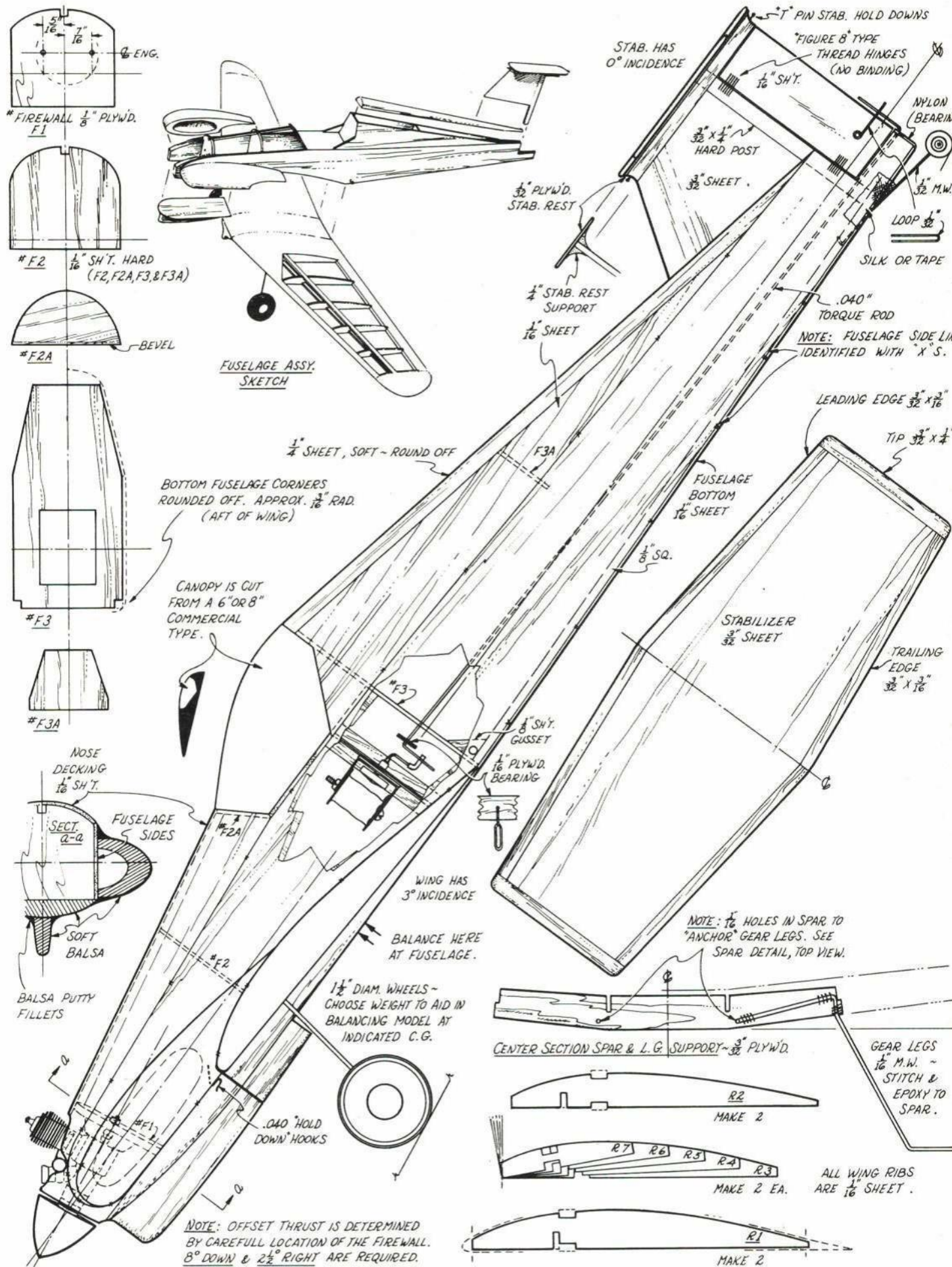
All would have ended there had it not been for a visit from Carl Goldberg. After giving his usual fine talk and demonstrations for a record MARCS turnout, we spent a delightful evening together. At one point attention turned to the "hung up" Rivets and its failure to perform. Carl looked things over and then chided me for giving up so easily—for not accepting the challenge of the designers' art. His words really reached me and, feeling a little ashamed, I went back to problem solving.

*Continued on page 76*

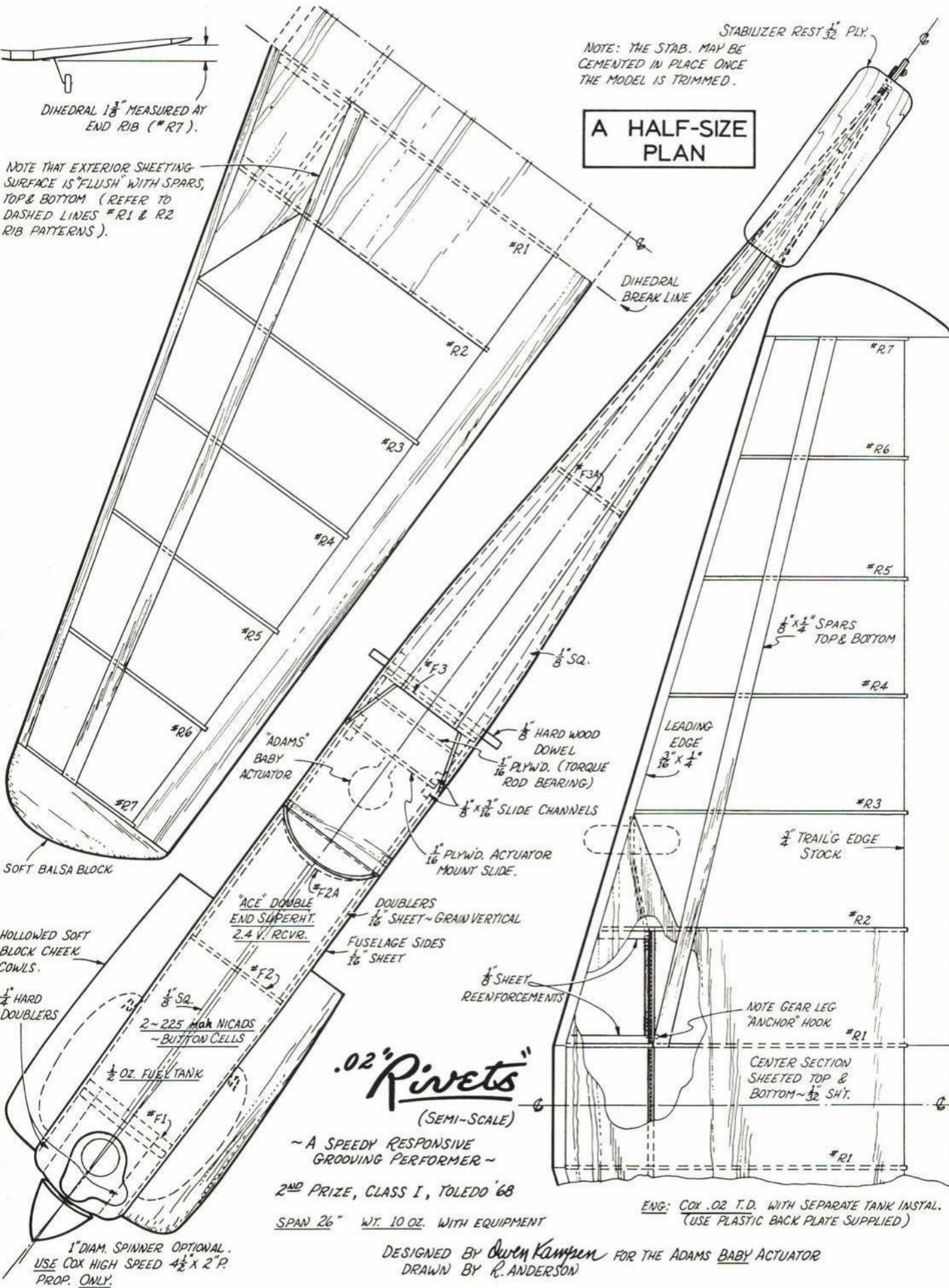


Real Rivets is a consistent winner. It is of all-metal riveted construction. Heavier than other racers, it is aerodynamically cleaner and faster. "T" tail smaller with less drag.





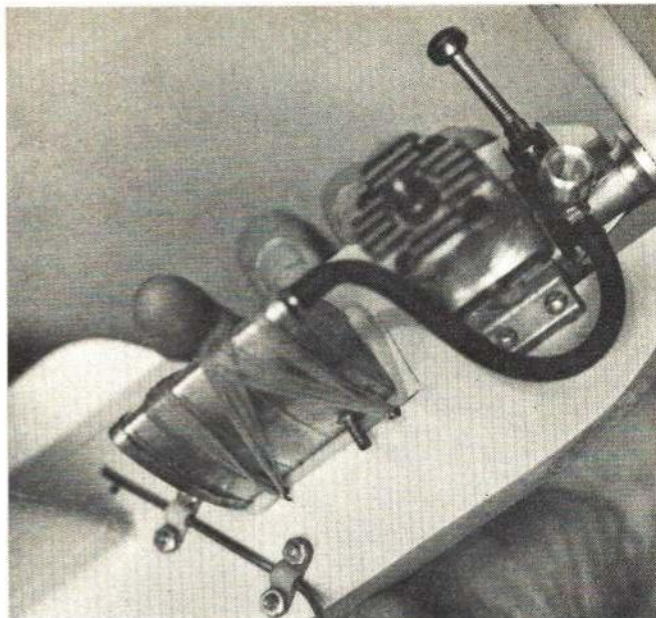








There's more learning and flying with this larger-sized trainer.



For neighborhood flying use a muffler. Note band-mounted tank.

# ATOM

A 15-powered advanced trainer for the novice, or basic trainer for the adult beginner.

## HOWARD C. MOTTIN

ATOM (for Advanced Training Operational Model) is a multi-purpose trainer. It is intended to teach the basic skills of control-line flying, and to serve a variety of other purposes. These could include: basic flight trainer, advanced trainer, sport model, basic stunt trainer, sport racer, slow combat trainer.

Any desired modifications can be made after the novice gains basic flying experience. This model was designed large enough in size to lend itself to conversion to more advanced flying possibilities. First, build as described. Then as flying experience is gained, try different modifications to the basic model and see what results can be achieved. As starters try a larger engine, more control movement, different CG locations. Learn by experience how different set ups will affect the flight. This model will serve as an excellent base for learning the fundamental laws of aerodynamics as

are applied to all control-line aircraft.

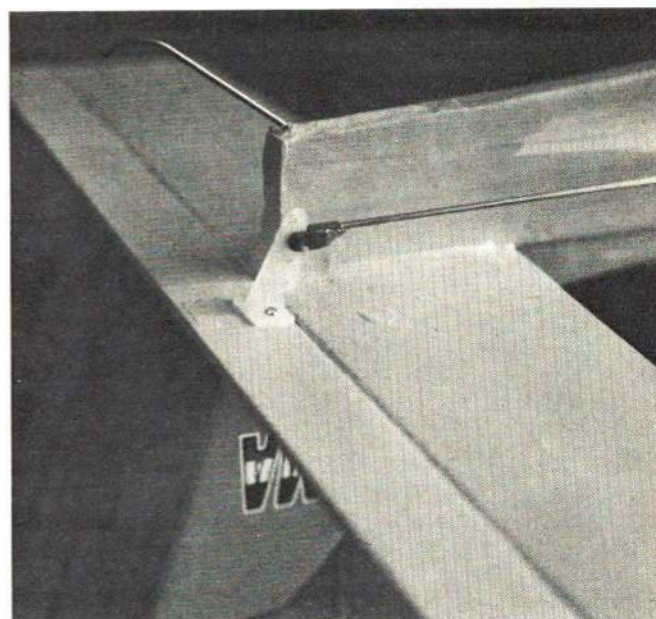
Any type of training aircraft must have three essential requirements: simplicity, durability, and flyability. Lack of any one of these essentials and the initial flying experiences of the novice can end in frustration. The aircraft must be simple to construct and maintain. This requires a minimum of parts and work. Once assembled, the plane must be durable enough to withstand the mistakes of the novice pilot. It cannot end up in a pile of sticks at the slightest bump, but it is impossible to design a model to withstand a power dive straight into the macadam. Therefore, it must be stable enough for the novice to control and fly with ease. A plane that assembles in two pieces from "cast iron" and flies like it, is of little value. A primary flight trainer must teach the essential flying skills.

The ATOM has these essential qualities: It can be assembled in a matter of hours with a minimum expenditure for materials. Three sheets of balsa, a piece of plywood,

hardwood motor mounts, and some wire are all the construction materials required. It has enough "beef" built in to withstand the rigors of many training flights. And because of the solid wood construction employed, it can later be altered to suit the wishes of the builder.

Finally, of primary importance is the fact that the ATOM is flyable. The functional design will not win any beauty contests. It has all the essential components of a control-line model aircraft in places that are easily accessible. For example, the novice can change fuel tanks or control movement with ease.

There are two good basic ways to start flying. The first is to build a small 1/2A size and the second is to use a larger size model. There are advantages to both methods and the novice can decide for himself which way to choose. The advantages of the 1/2 trainer were presented in the "Small Fry" article (May '69 issue). The main difference between a 1/2A-size model and a larger one is price. The 1/2A model can be built for



Control horn is from R/C source. It just bolts onto elevator.



the price of just the engine on larger models. The chief advantage of the large size models lies in flying performance. Building and flying 15-size and larger models gets the novice out of the toy category and into the sport events.

The ATOM was designed around the 15- to 19-size engines. Any of these engines will serve as an ideal powerplant. I choose an Enya 15 to power the prototype model primarily because it was available at just about all hobby shops in the area. The 15-powered model can be flown nicely on 52½-ft. lines. A 19-powered version could be flown on 60-ft. lines with the same performance. With these small engines, the plane is docile to fly and should present no unforeseen problems. Because of its large size, the plane will handle larger engines, with a corresponding increase in performance and flying difficulty. The recommended combination is a 15-engine, 9-in.-diameter, 4-in.-pitch propeller, and 52½-ft., .012"-diameter ready-made lines.

**Construction:** Lay out the parts on the wood sheets as shown on the plans. Use a ball-point pen or fiber-tip pen for this purpose. Then cut out all the pieces, using a sharp X-acto knife. It is easier to cut the plywood and thicker balsa with a jig-saw

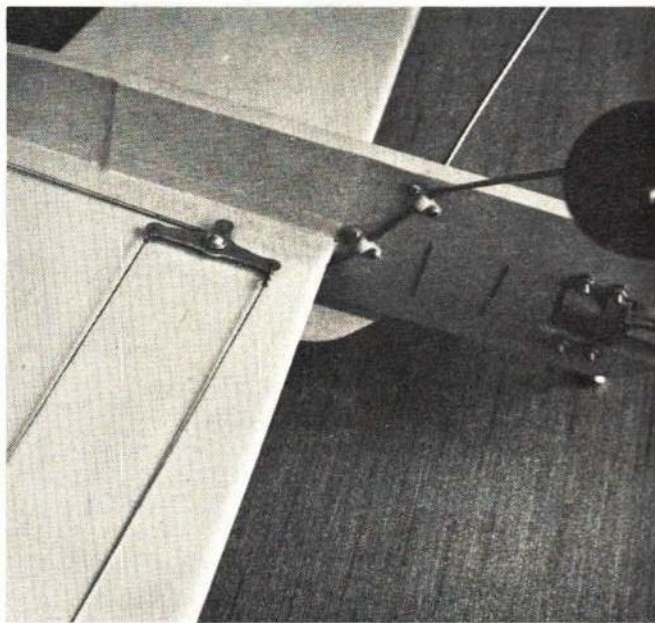
some positive dihedral to the wing.

Mark a line 1½" back from the leading edge all along the top of the board. Then lay the board on a flat surface and slide one of the ⅛" trailing edge pieces up to the rear of the board. With your pen, mark a line along the rear edge of the board at this ⅛" height. Using a razor-plane, shape the board to the airfoil section, holding the top line as the high point and the line at the rear for gluing on the trailing edges. Check as the airfoil takes shape with the template made from the plans. The airfoil is constant for the full 34" span. When carving is complete use a sanding block to remove rough spots and to round the leading edge. Following the shaping operation, pin the airfoiled piece down flat on your workboard over a sheet of wax paper, then butt glue to it the trailing edge pieces. Let set overnight to assure a good bond.

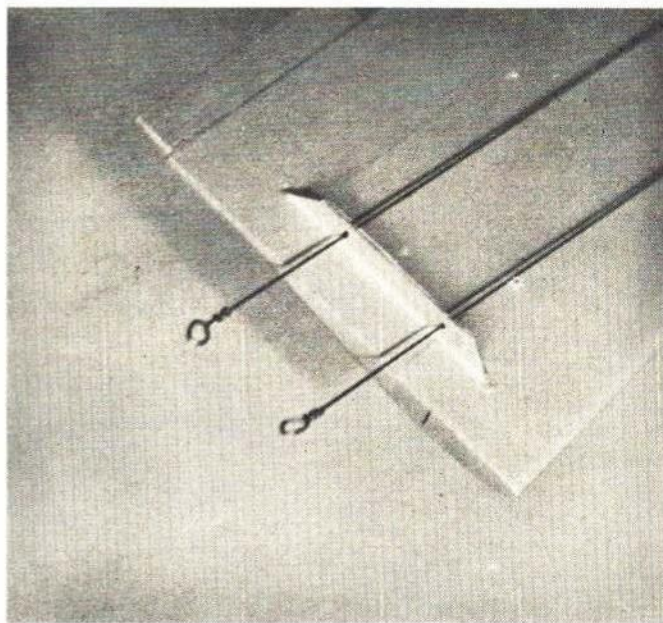
Remove the wing from the building board, determine the exact center, and draw a centerline. It should be close to 16½" from the end, but this is not critical. Draw the centerline on the top and bottom surface using a square for accuracy. Determine which is the right and left wing panel using the plan as an aid. Turn the wing over and mark the location of the ply-

as a sandwich. First, spread a thin coat of glue over the surfaces to be joined and let this soak into the wood pores for a few minutes. Follow this with a second liberal application of evenly spread glue. Join the plywood doublers and balsa fuselage together and slip the hardwood pieces into the slots between the plywood. Press the assembly flat on a table and hold it in alignment with your hands for a few minutes to allow the glue to begin to set, then clamp the assembly firmly in a vise, or with C-clamps, until the glue has thoroughly hardened. Let it set at least overnight. Glue on the canopy and plywood tail skid mount. Complete the stab assembly while waiting for the fuselage.

After the fuselage has set, remove all clamps. Wrap a piece of coarse sandpaper around a small block of wood. Use this to sand the round nose on the fuselage and to round off any corners. Follow this with a finish-sanding of the fuselage with fine sandpaper (320 or 400). Lay the fuselage flat and mark the locations for the engine mounting holes and landing gear holes. Use a ⅛" drill except the landing gear anchor holes, which are ⅜"-diameter. Drill the holes for the tail skid and the fuel-tank retainers with a ¼" diameter drill. It is



Midwest gear clips hold landing gear. Pushrod is under bellcrank.



Bring leadouts through guide before bending hook-up loops.

or razor-saw, if you have one. As each piece is cut out, lay it on the full-size plan and check for accurate size. If it is a little off (⅛" to ⅜"), don't worry about it. About the only important cutouts are the notches for the engine mounts and the wing slot. These should be made as carefully as possible to avoid problems in proper assembly. The flat portion of the airfoil should be cut along the centerline of the fuselage. The upper curved surface can be cut as shown on the wing template.

Each of the three major parts of the plane should be built separately for best results. The wing is made from the ½" sheet, the ⅛" trapezoidal pieces, and the two plywood supports. Start by carving the airfoil section in the ½"-thick, 34"-long balsa board. First, sight lengthwise along the board to determine which way it is warped. If you've been lucky enough to select a flat one, you're all set, and it doesn't matter which side is the top. If the board is warped, select the top as the surface that is curved upward. This will in effect give

wood bellcrank platform, and lead-out guide on the bottom left panel. Cut a slot ⅛" wide and ⅜" deep for the guide. Likewise, gouge out a recess for the bellcrank platform ⅛" deep in the wing. In the bottom of the right wing tip, cut a recess for a small weight. A flat fishing sinker will work perfectly. Glue in the platform, guide, and weight to complete the wing assembly.

The fuselage consists of six pieces. You have already cut out all these in step one; if not, do so now. The plywood pieces can be cut with a knife, but a jig-saw is better. The rounded nose section can be cut a little oversize. Don't worry about how smooth the curve is at this stage, it can be blended to a smooth round shape in the final sanding. The ⅜"-sq. motor mounts are made from hardwood. Maple is the best material, but spruce can be substituted. The purpose of these pieces is to prevent compression of the wood when the engine is bolted down tight.

The nose section is assembled at one time

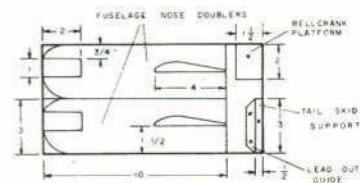
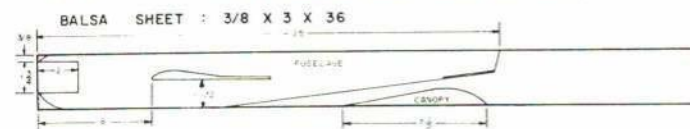
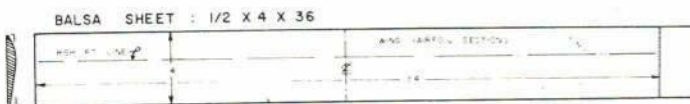
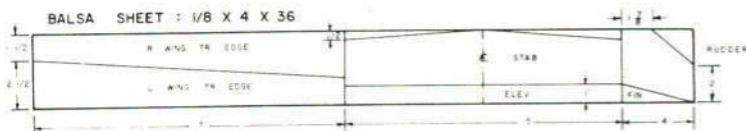
far easier to drill these holes now than later, when the wing is attached. Glue on the tail skid.

The tail assembly is conventional. Sand all the edges round with fine sandpaper, then pin the stab and elevator on the building board over a piece of wax paper, leaving a ½" gap between them. Small cloth hinges are glued alternately between the stab and elevator. Start at the ends and work toward the center. Leave about half the hinge cloth extending past the wood. After the glue has dried, turn the pieces over and mark a small "x" where the cloth will be glued on the opposite piece. Then slide the stab and elevator tightly together and pin down to the board. Make sure none of the cloth hinges becomes crumpled under the wood. Glue hinges over the x's.

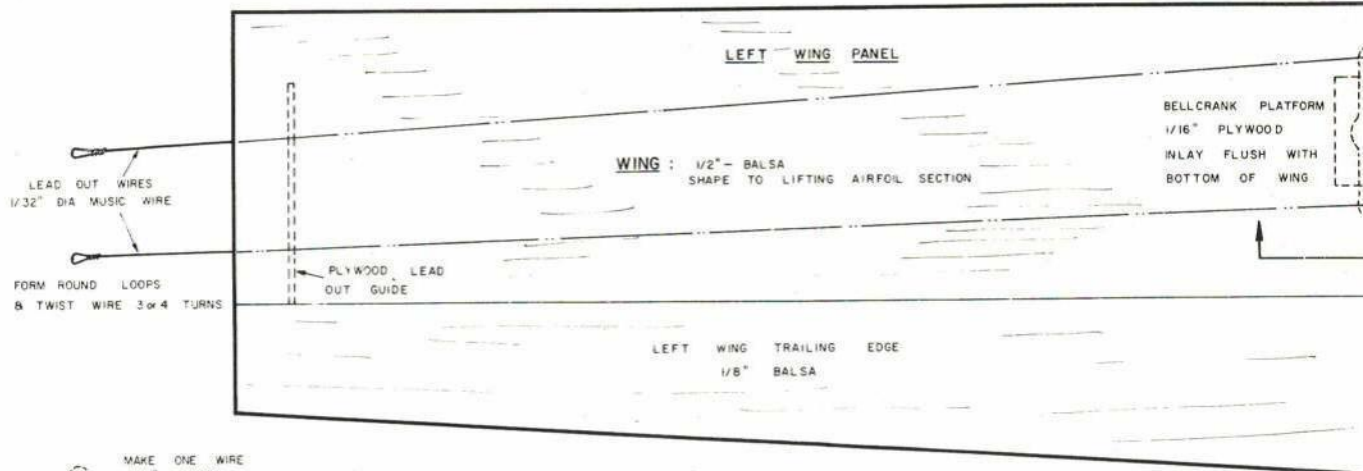
We are ready for final assembly. If you did not draw a centerline on the top of the wing, do so now. Measure a ¼" over on each side of the centerline and draw two parallel lines on top and bottom. Slide the

*Continued on page 72*





PLYWOOD : 1/16 X 6 X 12



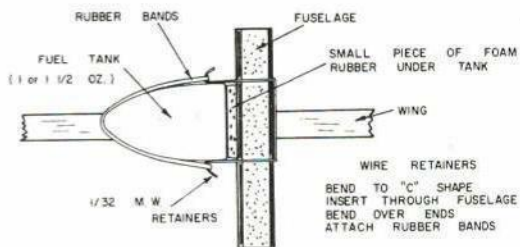
LEAD OUT WIRES  
1/32" DIA MUSIC WIRE

FORM ROUND LOOPS  
& TWIST WIRE 3 or 4 TURNS

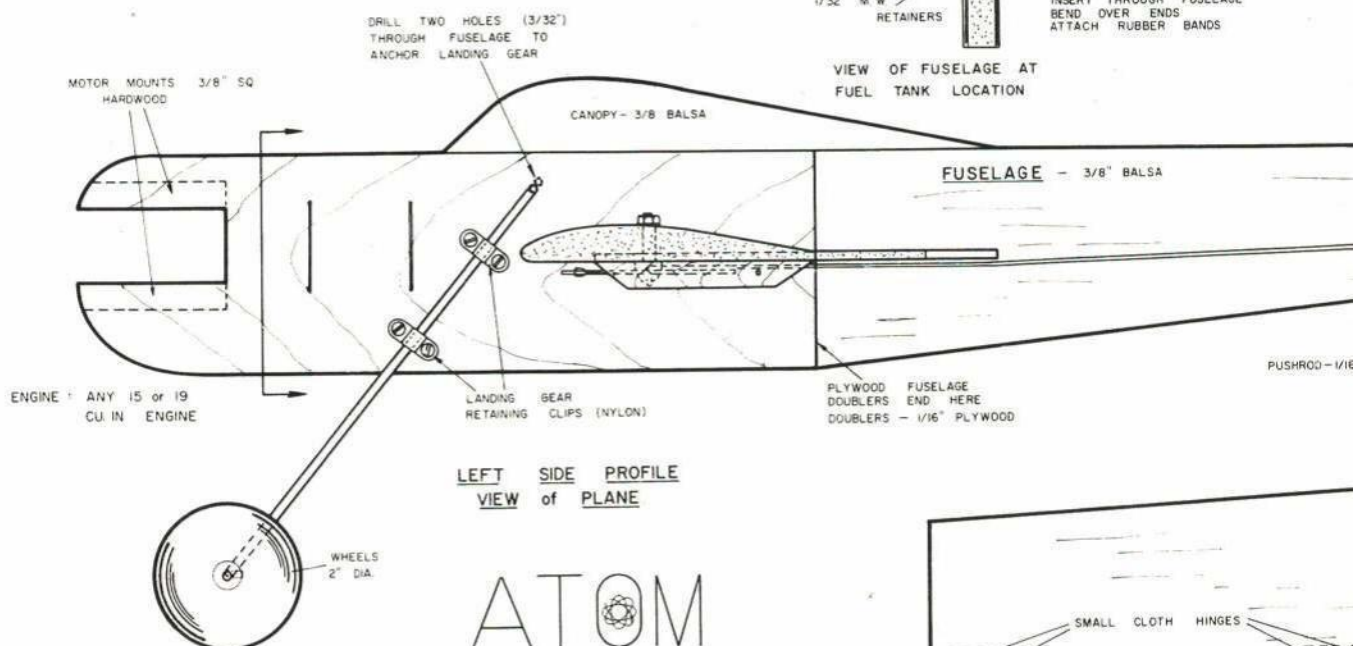
PLYWOOD LEAD  
OUT GUIDE

MAKE ONE WIRE  
1/8" LONGER

LANDING GEAR WIRE  
2 REQD - 3/32" DIA MUSIC WIRE



VIEW OF FUSELAGE AT  
FUEL TANK LOCATION



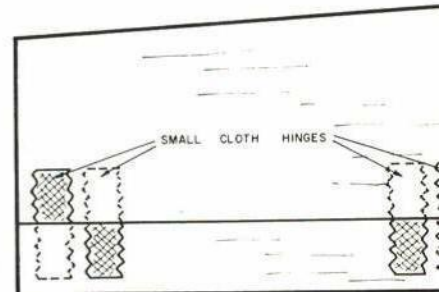
LEFT SIDE PROFILE  
VIEW of PLANE

ATOM

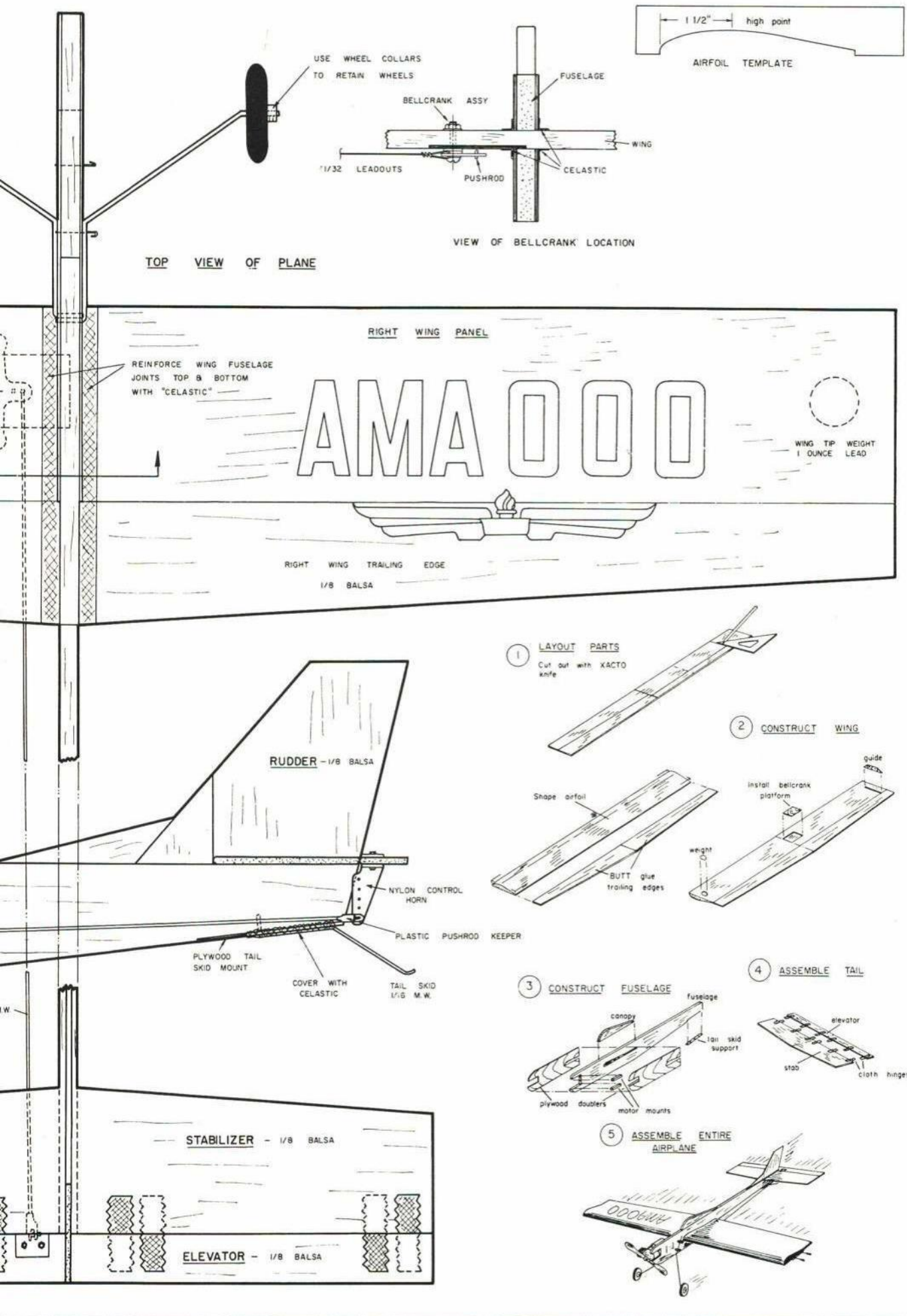
DESIGNED BY HOWARD C. MOTTIN



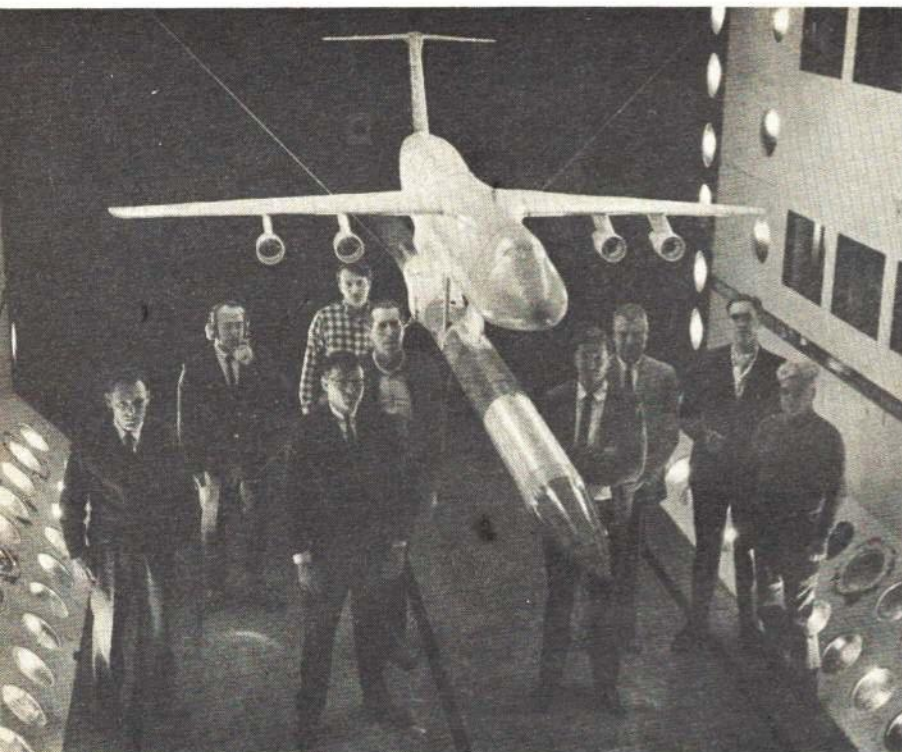
HCM











Lockheed C-5A flutter test model in wind tunnel at Langley. With this kind of model, cameras and strain-gages determine the exact strength or flexibility required of real plane's structure.



Data on lift, drag, and aerodynamic stability are determined with force models. This one has been tested at tunnel speeds of Mach .90. With it, shapes of various parts are changed and studied.

# The Ultimate Models

Precisely built models "fly" wind-tunnel fashion to help solve engineering problems.

**GEORGE PERRYMAN** Senior Aircraft Design Engineer Lockheed Aircraft Corp.

WHENEVER you see a jetliner or supersonic fighter whistle over, you can be sure it has been tested as a model many thousands of hours, long before the first actual flight as a new plane. These flights are made in wind tunnels by fantastically accurate models. Very little wind-tunnel testing was done before the First World War, since it was cheaper to build a full-scale plane and hire a brave test pilot. Planes then were so slow compared with today that almost anything with wings and tail could be made to fly, and efficiency wasn't at a premium as it is now.

Some wind-tunnel models are built to contoured accuracy within .001 inch from solid stainless steel. The materials used today have kept pace with the ever increasing requirements of strength, accuracy, and new methods of fabrication. For example, 8-foot model of a large military transport, such as the Lockheed C-5A Galaxy, which has flaps, elevators, rudders, ailerons, and leading-edge flaps, may cost \$300,000 to design and build. This may sound like a tremendous sum, but remember this model is approximately only  $\frac{1}{25}$  of the full-scale airplane. Any inaccuracy of even  $\frac{1}{100}$  of an inch means one-quarter inch on the real plane. The final contouring must be hand-worked by skilled craftsmen, and it is a very tedious process working to microscopic tolerances.

Since the range of wind tunnel testing is

so large, zero mph to over 20,000 mph, we will deal here only with subsonic models tested up to Mach 0.95 (722 mph at sea level). There are several basic types of subsonic models tested. To mention only a few:

**Force model:** Force models, which may be mounted with a sting running from the aft end of the fuselage to the tunnel support. These models usually have a six-component balance mounted in the fuselage which will give data for lift, drag, side force, pitching moment, yawing moment, and rolling moment. These forces and moments are electronically registered and recorded to determine aerodynamic efficiency, and to prove out stability and control. For example, many different wings, fuselages, fillets, and tail shapes are tested many months or years before final airplane configuration is decided. Models are the economical way to do this. Can you imagine trying a dozen different full-scale wings (223 ft. span) on the real plane? We would have to wait many years to get the optimum wing, fuselage, and tail combination, to mention only the basic items.

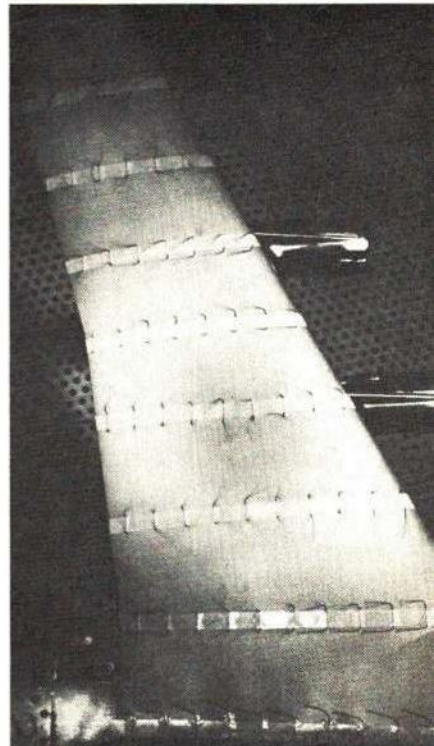
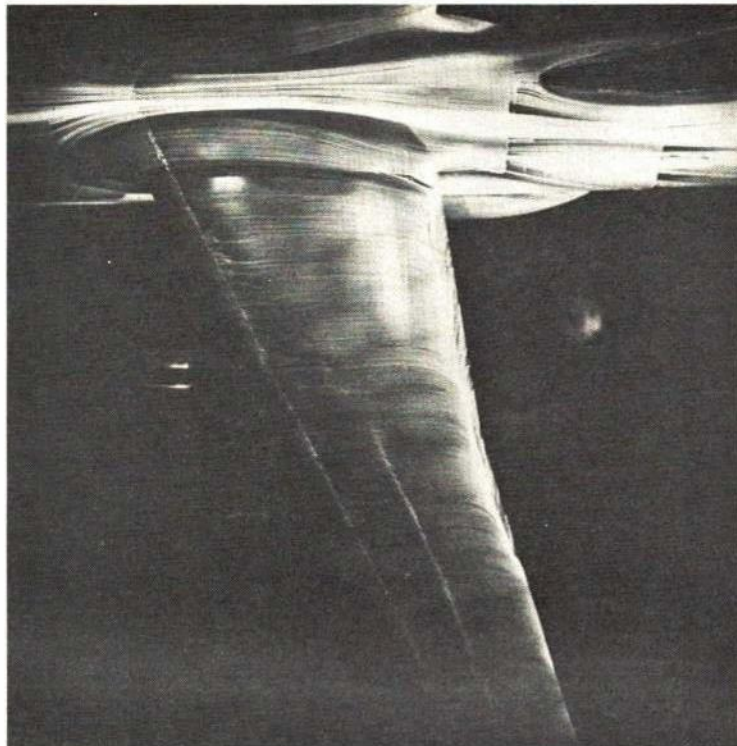
To make a plane fly fast and also land and take off relatively slowly is the major cause of gray-haired engineers. High-speed models are necessary to obtain data for cruise condition, which accounts for 95% of cargo airplanes' flying time. After testing many wings, fuselages, tails, and power-plant combinations, and arriving at what

we hope is an optimum, effort is exerted on smaller items in an effort to further reduce drag. Appreciable drag reduction can be realized by smoothing airflow around the wing-and-fuselage junction and in wheel-fairing area. Just the "right" fillet or fairing is arrived at by testing 15 or more. Many pylon-nacelle combinations also are tested and evaluated on the basis of drag, weight, and efficiency of engine inlet.

On an airplane such as the large C-5A, airplane drag reduction is of paramount importance. By lowering drag just one-third of 1% there is a cost savings of approximately \$200,000 over a ten-year span for each plane. For this seemingly small drag reduction, the plane can carry 1,000 pounds more payload or fly 55 miles further on each mission. We are dealing with a plane which is the largest to enter production to date, with a gross weight of 728,000 pounds, 223 feet in wing span, 246 feet long, 65 feet high, and with four G.E. TF 39 engines generating 164,000 pounds of total thrust. This plane must be efficient if it is to carry 220,000 pounds of cargo 3,500 miles, or up to 260,000 pounds for a shorter mission.

Military requirements dictate that the takeoff and landing distance must be less than commercial jets flying today. There is the additional requirement of operating from unpaved runways throughout the world. Lockheed has had to go all out for this one and utilizes 24 main wheels and





Because air as a fluid can behave unpredictably when flowing around solid objects, various types of flow visualization tests are made. Here, light oil on surface shows air-flow patterns.

A more familiar type of visualization is with yarn tufts. Here, a wing at high angles of attack shows simultaneously flow separation, reversal, and smooth laminar flow. Note flow in upper left.

four nose wheels to decrease imprint pressure, which is pounds per-square-foot ground contact loading on each tire. Engine reverse thrust, in addition to wing T.E. flaps, L.E. slats, and upper-surface wing spoilers, are utilized to add drag and/or reduce lift, so the wheel brakes can stop over 300 tons of plane in a short distance. Hundreds of tests are necessary to prove aerodynamic, structural, and mechanical integrity long before the big bird flies.

On wind-tunnel force models' ailerons, flaps, rudders, elevators, cargo doors, pylon-nacelles, etc. are strain-gaged to give data for determining strength required, and also how much force is required for actuating mechanism to operate them.

Simultaneous development of low-speed models is necessary to the landing and takeoff regime. The problem here lies in developing high-lift devices, such as leading and trailing edge flaps, which will increase

lift so that the plane won't be a "ground-hog." This is a never-ending task, since weight, design time, manufacturing cost, and maintenance costs can skyrocket if an overly complex system is chosen. Single-slotted flaps, double-slotted, Fowler flaps, and even some with no name yet are tested. The final flap selection requires many months of almost continuous testing and evaluation. There is great challenge to develop high-lift devices which enable the low and slow portion of the flight requirement to be realized.

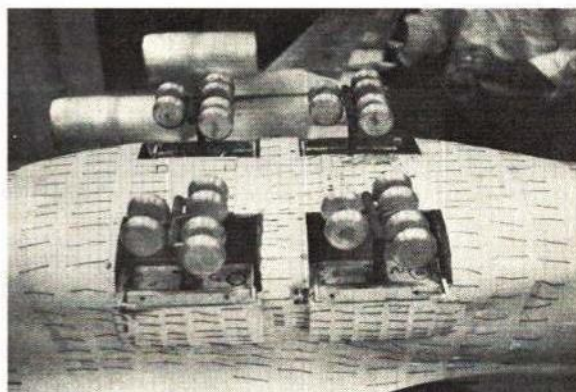
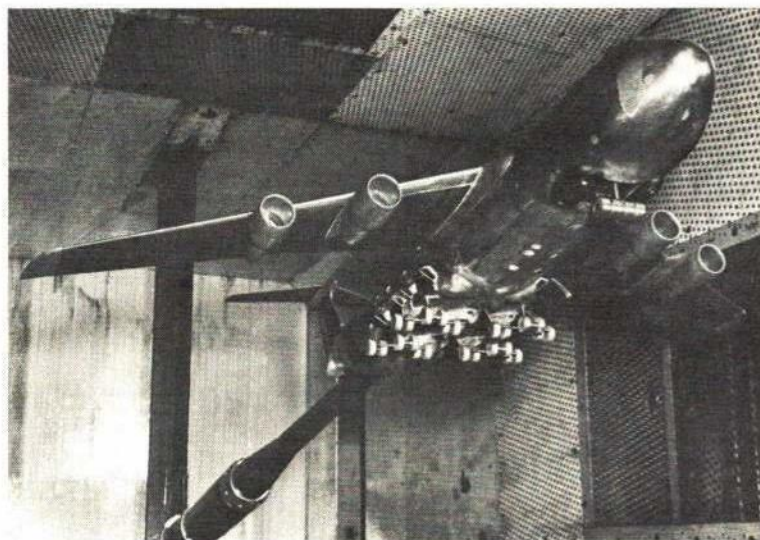
On the first flight of the C-5A Galaxy, the takeoff speed was within two knots of calculated speed, determined many months prior as results of much careful wind-tunnel testing.

Over a dozen complete models with many extra components are necessary to develop the C-5A. Most of these are designed for a safety factor of five times the expected

load. This is necessary because, if any model part should fail, severe damage can result to a \$30,000,000 wind tunnel. All screws must be the self-locking type. For example, the wing alone on an 8-foot-span C-5A model will lift over 10,000 pounds. This means that the wing-to-fuselage bolts must be able to carry over 50,000 pounds. To house electric motors, pressure tubes, switches, valves, etc., can be rather exasperating, since the inside of the fuselage may be packed in every cubic inch of space. Components have to be designed to be quickly removable, since wind-tunnel testing time can run thousands of dollars per hour. It is easy to design a hard model to work on, but sometimes difficult to design for simplicity in making necessary replacements.

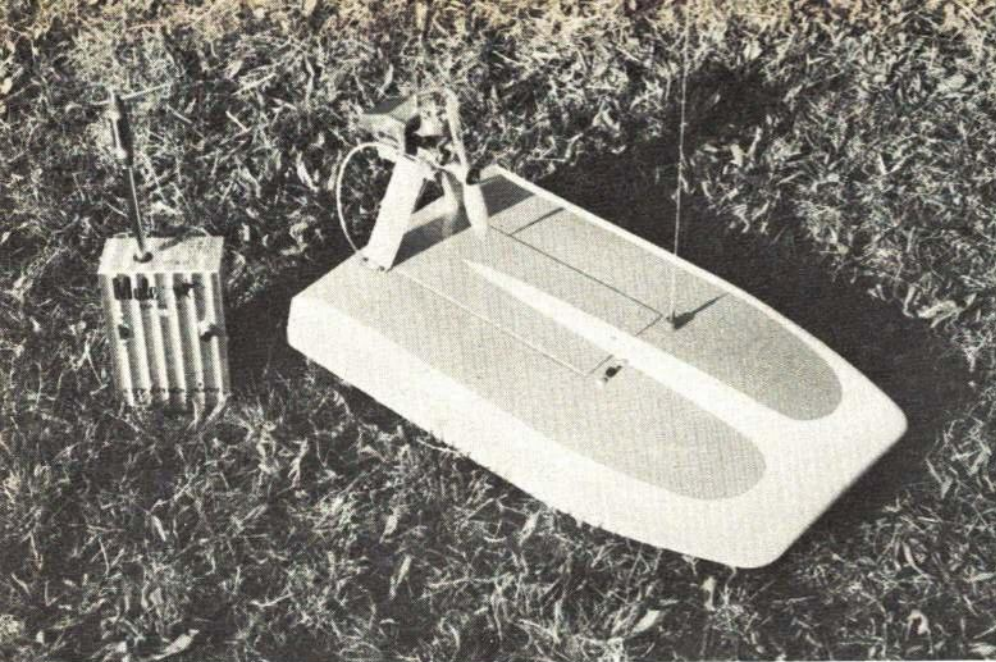
**Pressure models:** Pressure models externally look almost like force models. Instead

*Continued on page 69*



Considering that the C-5A has total of 28 wheels, engineers are interested in their aerodynamic influence — such as drag, turbulence, and pitching effects. Model on right has retractable gears to show turbulence caused before, during, and after retraction. Tufts at normal position.





Skimmer is exciting and useful. You can take it along on vacation or put it to work to retrieve stalled power boats or seaplanes and becalmed sailboats. Note whip antenna.

# The Skimmer

For fun at the lake, how about a 15-powered R/C airboat? Only rudder and engine control are needed.

PAUL W. HOOK

THE Skimmer is evolved from the old RA Airboat kit, but is slightly larger in length and in beam, but lower in profile. It is necessary that an airboat be low in profile and have sufficient beam because engine torque and centrifugal force in turning can flip an airboat. These boats literally skim the surface of the water. Thus, the name, The Skimmer.

**Construction:** The entire hull is constructed of  $\frac{1}{8}$ " balsa. The two outer sides and bottom are hard balsa. For obvious reasons, the rest of the balsa is medium-grade except for the top fore deck, which is soft balsa because of the slight compound curve.

I decided to use the egg-crate method in building the hull framework, and to a degree, this type is self-aligning. You will note the 15 watertight compartments. The hull is unsinkable.

Construction begins by slipping bulkheads #3 and 6 into slots of the inner sides. Then cement and pin over plans to keep in alignment. Add the transom and bulkheads #4 and 5. The outer sides are cemented to bulkheads #3, 4, 5, 6, and transom.

At this point, I advise the use of waterproof cement, such as Ambroid. Do not use white glue or Titebond. They are not waterproof. The  $\frac{3}{8}$  x  $\frac{1}{2}$  x  $3\frac{1}{4}$ " hardboard pylon mounts are drilled per plan, 4-40 blind nuts installed, and then glued in notches in bulkheads #5 and 6. Note, these pieces extend  $\frac{1}{8}$ " above hull framework. This is to keep the top even with the top sheet.

While this is drying, glue up top and bottom sheeting. I used two pieces of soft  $\frac{1}{8}$  x 4 x 11". This completes the foredeck sheet from nose block to dash. For the bottom

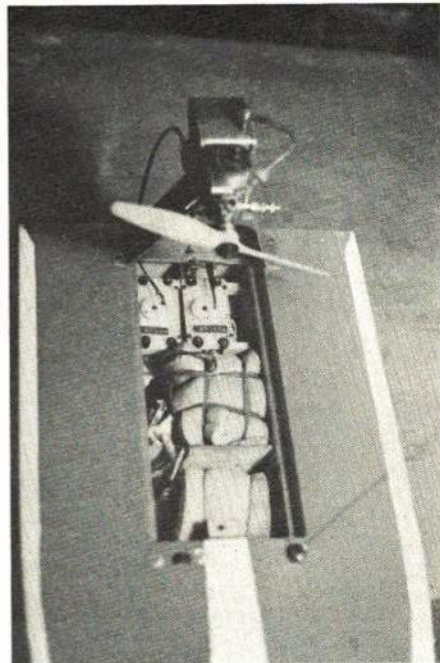
sheet, use three pieces of  $\frac{1}{8}$  x 6 x 11" plus one piece of  $\frac{1}{8}$  x 2 x 11". Use the masking-tape method of joining the top and bottom sheet, as this keeps the joints even. Next, add bulkheads #1 and 2 to hull and draw outer sides in and cement to these bulkheads. Add  $\frac{1}{4}$ " thick gussets at junction of outer sides and bulkhead #1. When this is dry, add bottom sheeting and top foredeck sheet. For the top rear sheet, use  $\frac{1}{8}$  x 4" sheet with the grain running fore and aft. Notch out for pylon hardwood mount pieces, cut small strip of  $\frac{1}{8}$ " to cap top of bulkheads #6 and transom. Cut a piece of balsa  $\frac{1}{2}$  x  $\frac{1}{2}$  x  $1\frac{1}{4}$ " and cement in position for rudder post. Drill for a piece of  $\frac{3}{32}$ " I.D. (inside diameter). Cut a brass tube  $1\frac{1}{2}$ " long, and epoxy in hole. When hull sheet is drying, construct hatch and plank with  $\frac{1}{8}$ " balsa, grain running fore and aft. Allow to dry overnight.

Cut aluminum pylon from  $\frac{1}{16}$ " stock. (I used a Mirro loaf cake pan.) Bend according to plan and drill for 4-40 screws, using a  $\frac{7}{64}$ " drill. Drill to suit engine used.

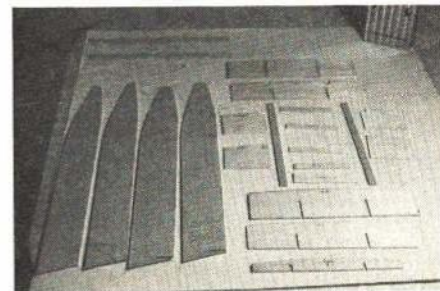
Add 1 x 1 x 9" balsa nose block. Allow to dry. Then sand the entire hull. Cover with silk or silkspan. Cement keels in place directly under inner side pieces. Apply eight coats of butyrate clear dope and wet sand. Paint it any color you desire.

Bend a piece of  $\frac{3}{32}$ " music wire as per plan. Solder a  $\frac{1}{2}$ " length of  $\frac{3}{32}$ " I.D. brass to top and flatten the end. Then drill  $\frac{1}{16}$ " holes for Kwik Link.

Drill a  $\frac{1}{8}$ " hole in rear hatch bulkhead and in #6 bulkhead. Cut  $\frac{1}{2}$ " length of  $\frac{1}{8}$ " dowel and cement in hole in #6 bulkhead. Cement a piece of hardwood to center of front hatch cleat. Drill a  $\frac{5}{32}$ " hole and install a 4-40 blind nut. Drill a  $\frac{7}{64}$ " hole in hatch sheet to match one in the above block. Use a  $1\frac{1}{4}$ " 4-40 R.H. screw with washer



Sequential single-channel set guides it. To operate at peaceful resorts use a muffler.



Basic parts: sides, bulkheads and transom. Top and bottom sheeting cut to fit later.

under head to hold front of hatch in place.

The original Skimmer used Royal rudder and engine-control servos, O.S. Max .10 R/C engine Controilaire SH-100 receiver, mule transmitter, and a Perfect 2-oz. profile control-line tank.

The throttle linkage is via nylon tube and cable which is cemented into the hole in bulkhead #6 and transom, and clamped to aluminum pylon with a Top Flite landing gear clamp.

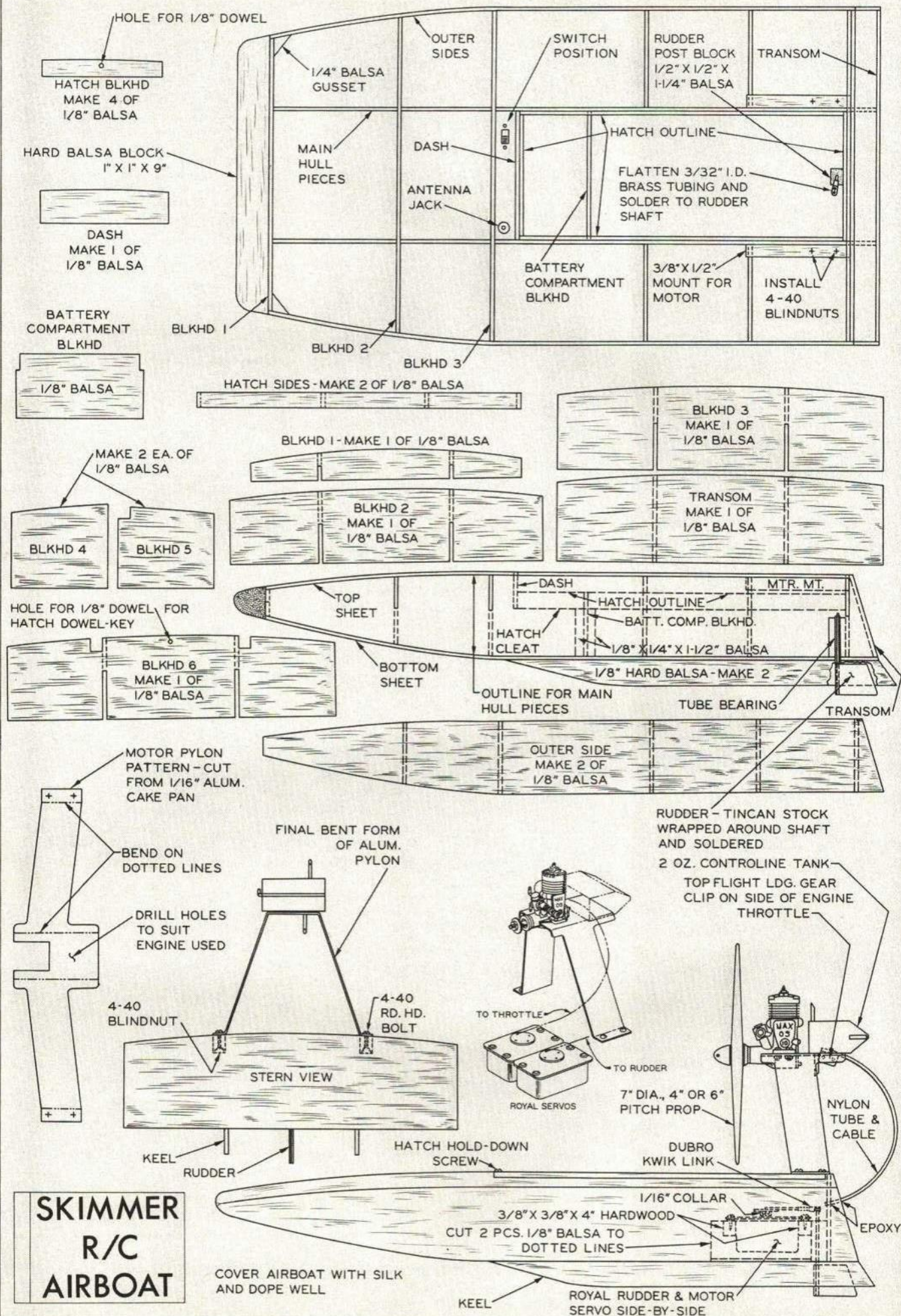
The rudder is cut as per plan and soldered to a  $\frac{3}{32}$ " rudder post.

And now, a few tips on the operation of The Skimmer. If the boat isn't balanced properly, it will porpoise (front end will slap up and down) when running. To alleviate this, move the battery pack forward, or if necessary, add weight. The original model worked A-Okay with the equipment mentioned. The hull should set level at rest in the water. Do not attempt to run The Skimmer without keels. They give it directional stability.

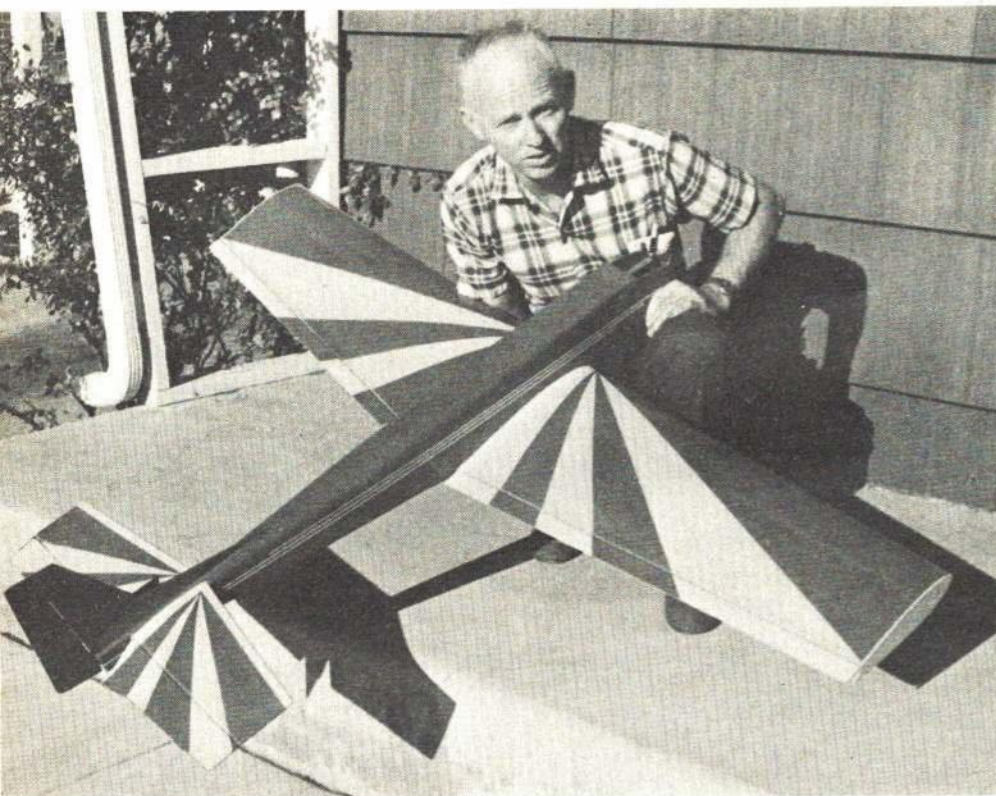
The Skimmer has proven to be very easy to construct, economical, and it is very dependable with the equipment suggested in this article.

Picture, if you will, several Skimmers running at once, using superhets. What a thrill to behold! So let's have at it and be prepared for spring. I intend to install my Logitrol proportional for a try next spring. See you at the local pond.









The sunburst paint scheme is one of the most fascinating, difficult, and visible. However, with clear plastic covering it becomes one of the easiest to lay out and paint.

## NEW CONSTRUCTION TECHNIQUE FOR R/C

# Cellulose Wings

Clear acetate foam-wing covering offers unusual inside painting technique, high gloss, and great strength.

### GERALD HAYHURST

YOU will need about 42 x 40 x .010 in. cellulose-acetate sheet either all-clear or frosted on one side. It may be obtained from most office and art supply dealers (used for covering maps, etc.). Cost is about 50c a foot or less if purchased in quantity. You will need foam wing cores. To spar the cores, I let in a spruce  $\frac{1}{8}$  x  $\frac{1}{4}$  top and bottom spar. Since the acetate is stronger than paper, we do not need as much spar. At the center I use a  $\frac{1}{8}$  plywood brace about 8" long, and pine blocks carved to shape, for the hold-down bolt at the rear, and dowel pins at the leading edge. Sand cores smooth and set aside.

Put a sheet of cellulose acetate on a table covered with a blanket to prevent scratching. Lay the wing core straight on the acetate with about  $\frac{1}{2}$ " sticking out past the

root, marking a line with a grease pencil (all grease pencil lines are made on the outside of the cover) along the trailing edge and about  $\frac{1}{2}$ " out from the tip. Roll the core up so that it is setting on the leading edge; make a mark in the  $\frac{1}{2}$ " border at the center of the leading edge. Roll the core on over and again make a line along the trailing edge. Make sure the core did not slip. Cut along the lines you made, then make one for the other half.

Lay one of the acetate panels on the table (greased-penciled side up) and make a grease-pencil line starting in about 3" from the root and about  $\frac{1}{2}$ " back from the center marks you put on earlier. This is the front edge of the fan pattern. Make the rest of the pattern to suit, or any other pattern that you like. I selected this one because it is most visible.

Lay the marked pattern face down on the bench. Put the other half on top, face up.

You will see the pattern from the first panel; trace on the second panel. Sand the panel on the bench (make sure you are sanding the opposite side from the grease-pencil marks) with most any fine sandpaper. Make sure you sand all the way to the edge. Pick up the panel and look at it in front of a light to see if it is sanded all over. Frosted material needs no sanding.

Lay panels, sanded side up, on the bench and mask the pattern so that the darker stripes are exposed. Make sure all the rest is covered, because any over-spray will show later. Spray one heavy coat of dark color, or two light ones. Let dry and remove masking. Spray on an all-over coat of light color; yellow is very good. You may need two coats to keep the spars and trailing edge from showing through.

Coat foam cores and both panels with any of the contact bond cements. Let dry. Start applying by carefully laying the trailing edge of the core on the edge of the panel so that the pattern is on the top of the wing. Roll the core over on the panel and rub out all the wrinkles. Trim excess, join the two panels together, and add wing tips. I use a piece of  $\frac{1}{8}$  plywood to make a square vortex-type wing tip. It drags the ground first in a one-wing-low landing.

Run a heavy coat of clear dope along the trailing edge and dope the wing tips with color to match. A  $\frac{1}{2}$ " strip of Monokote will seal the center joint, or use a bead of silicone rubber glue.

Put a small amount of dope thinner on a rag and clean the wing, to remove the grease-pencil marks and any over-spray that might have come around from the inside. Paint and add ailerons in the usual

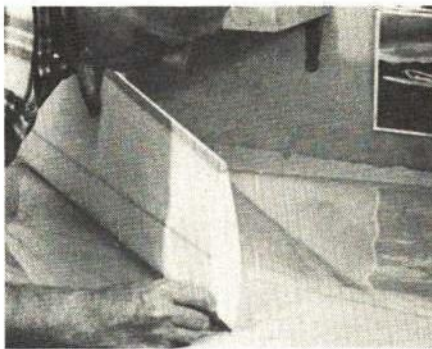
way, and you have a wing with a deep-looking paint job, and a shine you have never seen before.

Don't think this process is too much work, because once you have tried it, you will find it as fast as painting an ordinary outside-painted wing. And the results are highly gratifying.

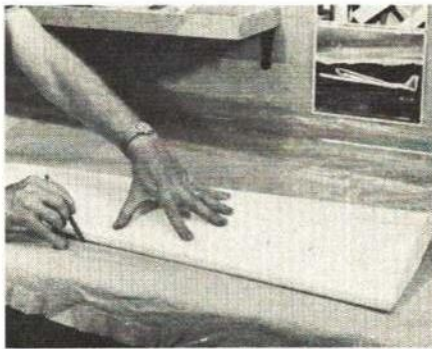
You could use colored  $\frac{1}{8}$  or  $\frac{1}{2}$ " cellulose tape on the inside as a feature strip between the colored dope. Put it on before you sand, then lightly sand over it. Now go on with the masking, using the tape as the line. If you have a stencil of your AMA number you might spray it on with silver or gold before the color goes on.

You won't notice any difference in the flying, but the wing cleans like glass. It won't soak up fuel, paint won't chip off, and if the other modelers don't ask how you got such a nice paint job, something is wrong.

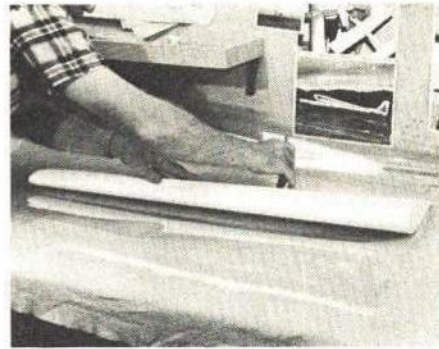




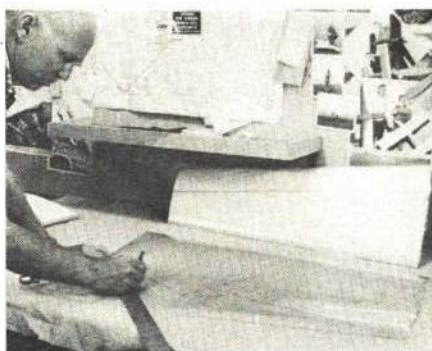
Roll up completed and sparred core on leading edge and mark center of plastic.



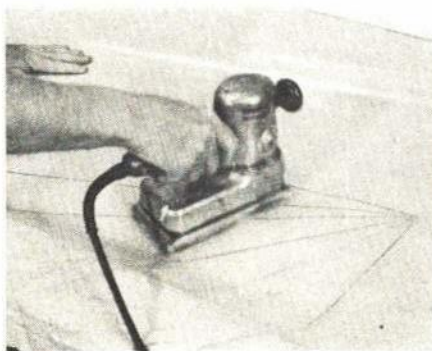
Roll from leading edge to trailing edge and mark covering allowing  $\frac{1}{2}$ -in. extra width.



Repeat the process for the other wing surface. Also allow an extra margin at tips.



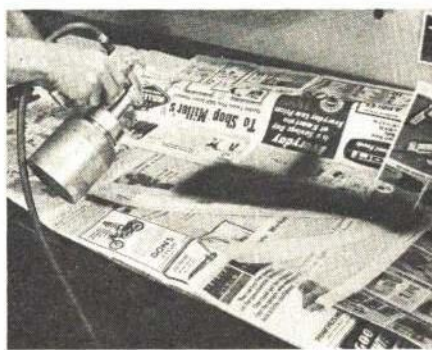
Using grease pencil draw the desired painting pattern on the outside of plastic.



Turn the material over and sand entire inside surface to prepare it for painting.



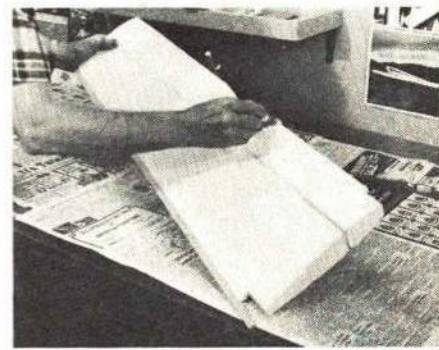
If spraying, completely mask the area to be second color with tape and newspaper.



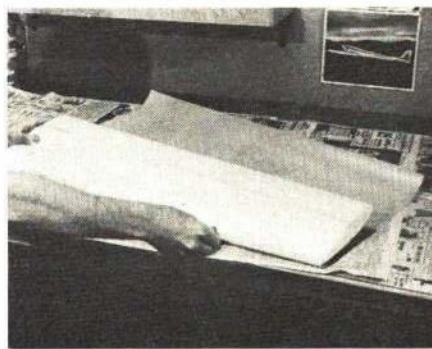
Spray dark color first. If metallic color, put color on first, then undercoating.



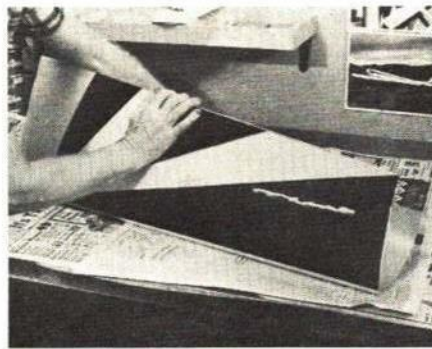
Remove the masking and spray the entire sheet. This one has solid-color wing bottom.



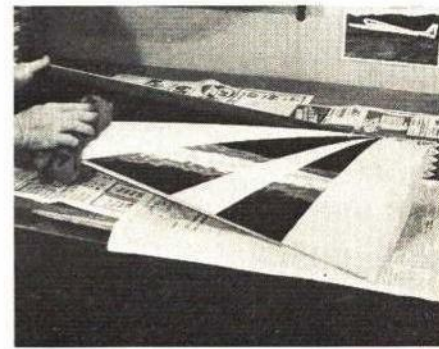
Thoroughly coat cores and painted side of panels with water-based contact cement.



Touch core and covering material first at trailing edge. Perfect alignment necessary.

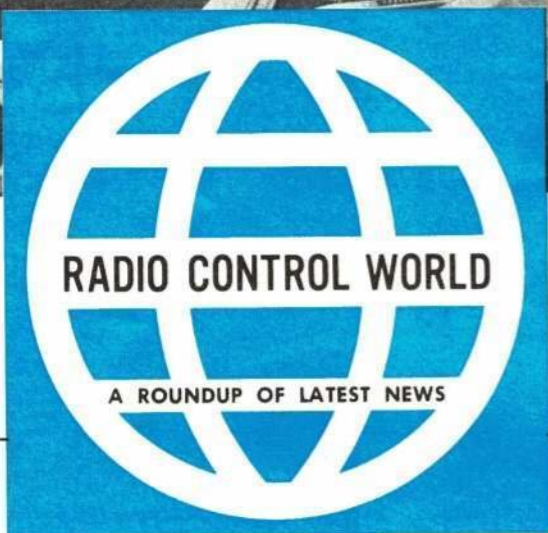


Slowly roll the core up to the leading edge, keeping covering taut. Roll to other side.



Trim edges, clean, add tips and hinge the ailerons. How about that instant gloss!





At M.A.T.S. show fabulous variety of beautiful R/C models was seen. This hobby offers something for everyone. Shown are sailplanes, racers, scale WW1, WW2, a modern jet, a modern private plane, a sporty scale biplane, experimental metal designs, and a fascinating black twin-engine delta. This last plane is 10th in a series of delta designs by Phil Girrard. It uses twin tractor engines, fiberglass, balsa and foam. Flies quite fast.

*An editorial 'People near model fields can have many different reasons why they don't want planes flown nearby—but NOISE is something they all can agree on!'*

A little over a year ago (Apr. '68 issue, p. 32) we had an editorial on the use of mufflers for model plane engines. Since that time some progress has been made. More clubs have adopted mandatory muffler rules, but still more clubs have lost flying fields due to noise complaints. As we pointed out the last time, people near model fields can have many different reasons why they don't want planes flying nearby—but NOISE is

something they all can agree on. And this is nothing new!

Some clubs are reacting to the problem in the only possible way; if they want to keep good flying fields, they have to use mufflers. The Ottawa (Canada) RCC was one. Complaints from neighbors (well justified, according to their club paper Editor, Ken MacKenzie) brought opposition to such a sudden head that the club President took it upon himself to impose a mandatory muffler rule within 48 hours. Much grumbling, of course, but with all engines muffled—and the field saved—Ken thinks that, if the group moves farther into the country where mufflers aren't really needed, they would happily continue to use them. The simple fact is that the reduction of noise in the pit area is just as beneficial to the flyers themselves as it is to non-modeling neighbors.

The very large DC/RC (Wash. D.C. area) is another case. After much soul-searching, their Executive Council decided to bring up mandatory mufflers (there had been noise complaints, even though their field is far out in the country) at the next meeting, and this fact was publicized in the club paper. We attended this meeting, and were all set for a bitter debate (following experience on the same matter in several New York area clubs). To our amazement the half-dozen or so members who spoke on the subject all seemed to favor mufflers—there wasn't a single real dissent! This must be a very level-headed group. At least, modelers' attitudes are changing..



# Technical Notes

**Wearproof needle valve:** Finding that needle valves on some of his big engines soon pound the brass N.V. tube to such an extent that erratic operation is caused by air leakage through the loose threads, Martin Dietrich (9690 SW Beaverton Hwy., Beaverton, Oreg. 97005) always drills the mouth of the tube so that a short length of Teflon tube may be inserted. (Sketch shows how.) A 1/4" depth is plenty. He finds the needle assembly then can be pushed in until its threads engage. The Teflon insert not only seals the needle for leakage, but holds it tight enough so it won't vibrate and enlarge the tube hole. For users of Enya engines, Martin notes that you can obtain left-hand rotation crankshafts, so that regular props may be used with pusher-engine installations.

A couple of errors crept into our condensation of Martin's description of the control stick setup (p. 35, April '69 issue). Parts D and E are inclined on their pot shafts as noted, but turned so there will be more down elevator than up. As Martin points out, deltas have a certain amount of up-trim built in—or they wouldn't fly—and extra down is required therefore to accomplish outside loops. Also, the setup for the new pots must be such that neither control stick will move them more than 50% of its total rotation (that is, of the amount of pot rotation needed to give full range of servo action).

Thus, one stick could move the two pots to 50% of full up, for example. If you turned the stick for full aileron action, one of the two half-up surfaces would go to maximum up (the other back close to neutral).

**Cable control actuation:** Requiring a light and simple system to link the tiny Bentert magnetic actuator to the rudder of a 22" span scale Curtiss Robin, Thomas Sanders (83 E. Shore Blvd., Timberlake, Ohio 44094) ended with setup seen here. A bent paper clip was bound and soldered to the actuator output crank (be sure to use heat-sink—hold area with long-nose pliers—on actuator shaft) with small loops at each end. Rudder horn was bent from a strip of thin aluminum, with tips even with hinge line, per A. Cords were tied to horns so that length is identi-

cal. Then the forward cord loops were attached to hooks on the actuator, and the latter positioned to take up cord slack, but not enough to apply tension. Cement actuator in this position. System is lighter than a torque rod, does not rattle, has no inertia and is easy to install.

**Glider tow hook:** Many kit gliders come with no tow hook, which is required for winch or Hi-Start launching. It is often helpful to be able to move the tow hook fore and aft a bit, to adjust to different wind conditions. We show here a hook that Dave Burt (3048 Central St., Evanston, Ill. 60201) worked out for his Kurwi, which has a fiberglass fuselage. Kit for this glider has no hook provisions.

Dave started with sub-assembly seen at top. Saran Wrap sheet was then taped to fuselage bottom in desired location, and two pieces of fiberglass cloth (or Hobby-Poxy Easy-Does-It cloth) placed over the Saran and coated with polyester or epoxy resin. The hook sub-assembly was placed over the cloth, then three or four more cloth squares were draped over the pin assembly and the previous cloth pieces, and the entire assembly well-coated with resin.

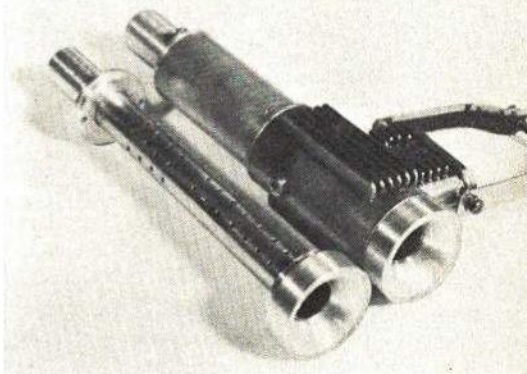
Mold the cloth so it is snug against the pin and wood strip, and all bubbles are pressed out. When dry, trim to the approximate shape indicated, and drill a couple of screw holes. Ply strips are epoxied inside the fuselage to hold the screws. Several pairs of holes at intervals of from 1/4 to 1/2" apart will allow quick field shifting of the hook as needed.

An active glider flyer, Dave had a ball with his glider at the Los Alamitos Nats, and also flew it at a field near Kansas City at last summer's Nats. He suggests that R/Cers attending the Philly Nats might like to locate a spot where they could fly during Nats week this summer—in a location that won't cause interference to or from Willow Grove N.A.S. Some simple competition might even be of interest. Dave is looking into the possibility of a suitable flying site.

**Supertigre muffler conversion:** Among the growing list of R/C clubs requiring use of mufflers we find the B.I.R.D.S. (Long Beach, Calif.) Members using Supertigre engines have found that the back pressure (and engine overheating) caused by the ST muf-



Newest Montana Duster is lighter and smoother. Has symmetrical airfoil with center-hinged ailerons. It's a winner too.



Stock Supertigre muffler can be easily modified to flow-through type. Purpose is to cool the hot exhaust-side of the engine.

More is being learned about mufflers—and more engines are coming out fitted with good ones. The conclusions seem to be that a good muffler doesn't have to weigh half a pound (or even half of that) to do a good job on a 60. A good muffler won't cut the power of the 60 down to that of a 50—or even less. And the right muffler can add considerably to engine power. In this case, we refer to tuned pipes. So far these are rather large, and designed solely to boost engine power. Suppose an engine maker set out to get reasonable exhaust quieting, and perhaps a little boost too. Would this cut size and weight? Who will try it?

The venturi-type mufflers seem the most popular in Germany and Switzerland, where mufflers are mandatory. (See notes later in this column on making one.) However, the new Merco muffler is simple, light and effective, though a little bulky. Just a simple expansion chamber.

Some U.S. R/C clubs have gained priceless info on which mufflers are best. The WRAMS (c/o Art Byers, 72 Daisy Farms Dr., New Rochelle, N.Y. 10804) of Westchester County, N.Y. have perforce used mufflers for some 2 1/2 years. Oddly, they find the main problem is keeping the mufflers on the engines. Mufflers come apart in flight, or drop off entirely. They recommend very careful prop balancing, and use of Clearseal silicone adhesive on every nut, bolt and thread involved in the muffler installation. Every point where this adhesive is to go must be

well cleaned beforehand with alcohol. They also suggest that a safety wire on the muffler isn't a bad idea (their field must be littered with the things!). This group also has firm ideas on which mufflers are best (they find most units made by the engine manufacturers work reasonably well). In cases where a "universal" type of muffler kills power and causes serious overheating, the WRAMS have one cure—use the next larger size of muffler, if you can obtain one.

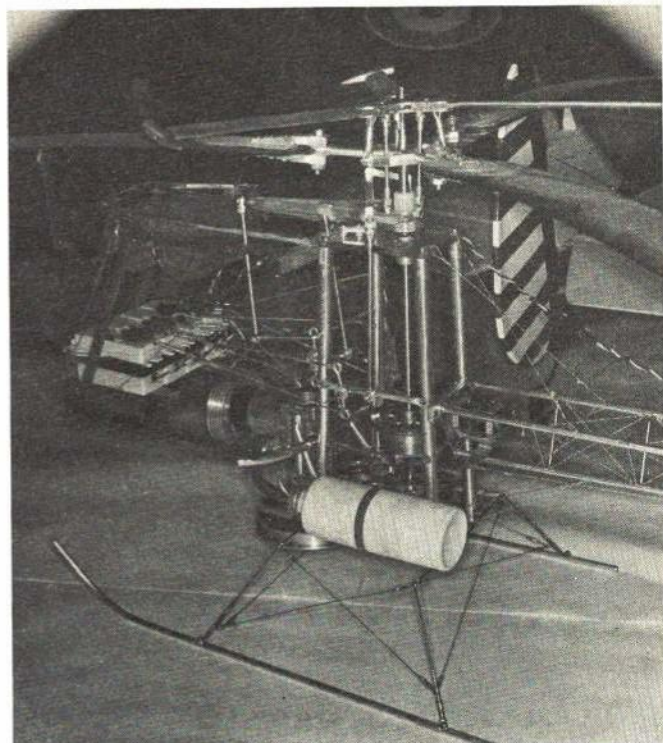
It may be significant that the SMAE lifted the mandatory muffler rules for England from free-flight and U-control, but retained the rules for all R/C flying (did the FF and UC boys just raise a bigger stink?). Also, as we understand it, mufflers will be required at the 1969 R/C World Championships events in Germany this summer, both for stunt and scale.

There has been a vast amount of experimentation on the muffler problem by clubs and individual flyers. It would be tremendously helpful to all power modelers (not only R/C plane flyers) if this info could be gathered, sorted and made available to us all. We urge all those with experience to send results to us. We'll be happy to collect, sort, and print them. Somewhere in all the research and testing that has been done we might find a few of the answers we need so badly to help us solve the noise problem. We'd also be happy to hear from engine or muffler manufacturers along the same lines, including such helpful data.





Ray Neugen starts his much-flown Krier Craft. It uses all the power of its O.S. 80 with big prop. Don Lowe did the flying and showed what realism-in-flight is really like. Very graceful too.



A few R/C copters were shown. This one by Ray Jaworski weighs 5½ lbs., powered by McCoy 35, driving 60" dia. rotors. It is not quite finished yet. Flying it may be harder than the building!

## DISPLAYED AT TOLEDO



As promised, Al Signorino proved to all that Snoopy's dog house would really fly—it did! Requires reliable power as it doesn't glide.



Real craftsmanship seen in boats displayed. Don Hickman showed home-made 4-cyl. in-line engine in his racing three-point hydro.



Amid Sherlock's monster Boeing 747, BOAC VC-10, and Lear Jet, Dave Platt's Douglas divebomber and a semi-scale helicopter.



A show stopper — Ron Jones G17S Stagger-wing Beechcraft with O.S. 80. Everything detailed: interior, structures, landing gear.

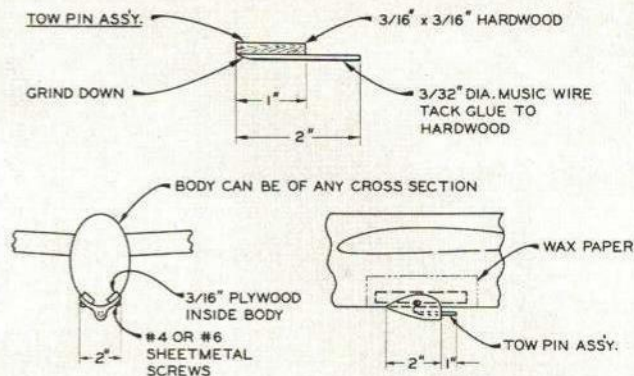
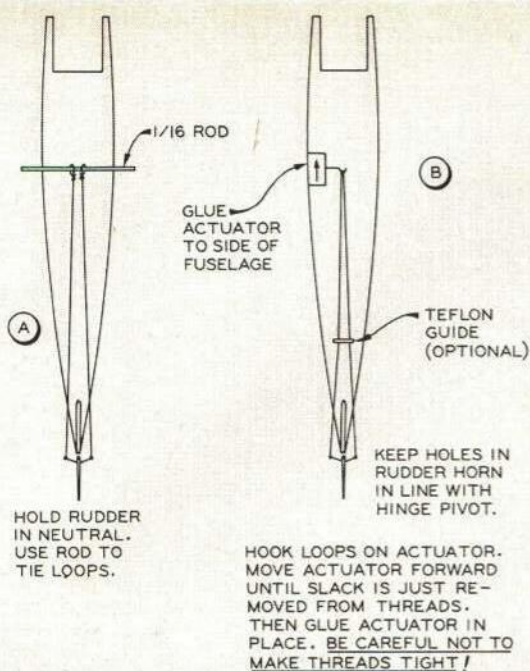


Land racing yacht by Harry Foucher has approx. 1000 miles running. Gets up to 3 times wind speed. All aluminum construction.



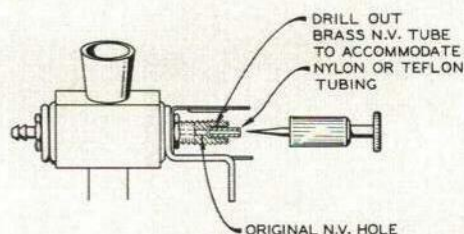
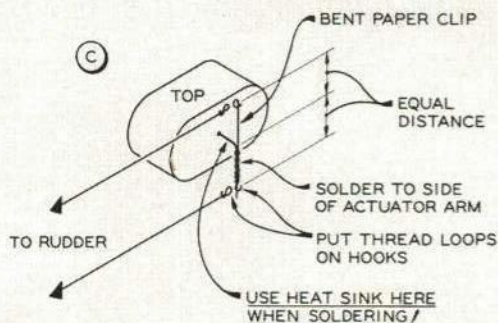
Graceful 12' powered glider is McGovern design. Elevons on flexible wing are best operated by sliding-tubing-type pushrod.





Dave Burt's adjustable tow hook on his fiberglass-fuselaged R/C glider made by forming a sliding fiberglass hook mount. Must also be strong for high-start launches and as skid for landing.

Cable control system seems best with magnetic actuators. Thomas Sanders offers this method of installation. System gives direct operation, no inertia, light weight, and easy installation.



Martin Dietrich found that with much flying the threads or spray-bar bearings wear out. So, he inserted Nylon or Teflon tubing in the spray-bar end. Engine makers could do this in production.

You must have identical-length cables. Hook cables to the arms of the actuator and locate the actuator in plane so that the slack in the cables is taken up. Should never need adjusting.

fler can be eliminated by changing it to the extractor type (also sometimes called venturi type). If you don't have the facilities for doing the machine work yourself, a kit of parts is available from Bill Willis (4813 Walnut Ave., Long Beach, Calif. 90807).

The kit is intended to convert the ST S 51/1 muffler, but the same conversion may be used on larger ST mufflers by shortening the extension tube, rods, and boring out the adaptor ring. As pix show, a venturi-style nose is made to fit the ST body and the full-length extractor tube has enough small holes drilled in to equal the area of the large tube. This gives almost 300% greater area for exhaust gases to exit than in the stock muffler. Back-pressure is relieved with no noticeable increase in engine noise. The airflow through the extractor tube helps pull the gases out and aids cooling. Engines with the converted mufflers have almost as much power as without, and they last a lot longer.

**Slightly smaller Kwik Fli III:** Or is it a larger Flea Fli? Bob Aberle (33 Falcon Dr., Hauppauge, N.Y. 11787) has an 80% scale Kwik-Fli III ready to go. Will be powered initially with an Enya .19 and Heathkit full house propo, and weighs 4 lb. This is somewhat larger than Phil Kraft's 275 sq. in. screamer, which Bob (and quite a few other Sunday flyers) consider a little too hot to handle. Also a little larger than the new Midwest "Flea-Fli +10" which has 336 sq. in. area, it will be an easier fit for Bob's

1968 Heathkit receiver. Bob expects he'll want more power eventually, and the plane is made to accommodate an Enya .35. He wonders if anyone has worked out a 6-meter band conversion for the tiny Albin receiver; says he would also like to see a 50-MHz conversion of the Marks Versapulse transmitter and a suitable receiver to go with it.

#### Grassroots

**Fourth Annual Northwest R/C Conference:** Held as usual at the Tye Motel, (Olympia, Wash.) this Feb. 22-23 affair showed the growth that all such R/C gatherings seem to enjoy—year after year. George Hickson (11809 18th S.W., Seattle, Wash. 98146) notes 300 R/Cers registered, probably 700 persons total, and 280 for the banquet. Some beautiful new planes were exhibited. There was a big showing of WWI types. Gordon Jensen won first in WWI Scale with his VK Nieuport 17.

The Mt. Ranier R/C Soc. has a WWI meet set for early summer. The Portland R/C flyers had some fine action movies of big (9' Piper Tri-Pacer and 10'-span Rearwin Speedster) R/C planes on floats. This club will sponsor a hydro meet at a reservoir in Eastern Oregon, July 4th weekend.

A very good showing of R/C boats was on hand. So many, that next year they will have a room for themselves. R/C glider interest is on the rise in the Pacific NW, just as it seems to be in the East. R/Cers are branching out in every direction, as a

change from the standard stunt flying! The 4th Conference also had practically continuous R/C movies, talks by famous personages, a fashion show for the ladies.

**Eastern States Jamboree:** R/Cers within reasonable travel distance will have to add the Eastern States R/C Jamboree to their late winter list of "musts." On March 16 some 2400 paid admission—making the first annual holding of this affair a resounding success. Besides a fine show of model planes and boats on exhibit, 31 manufacturers were on hand with their wares.

It was apparent soon after 10 a.m. opening that the Westchester Radio Modelers Inc. had a tiger by the tail—they will need more space next year. They had to turn away several manufacturers due to lack of table room. Quite a few modelers who had planes with them didn't bring them in, as exhibit table space was limited. So was aisle space. Fortunately, the Westchester County Center (located in White Plains, N.Y., very close to major highways from every direction) has much larger floor areas, which will certainly be needed for 1970).

The WRAMS had set up six judging categories for models, in addition to Best of Show and the Testor Best Finish Award. Judges Bill Northrop (MAN), Howard McEntee (AAM) and Frank Devore (WRAMS) came up with the following top placers (prizes went through third in every cate-

Continued on page 54





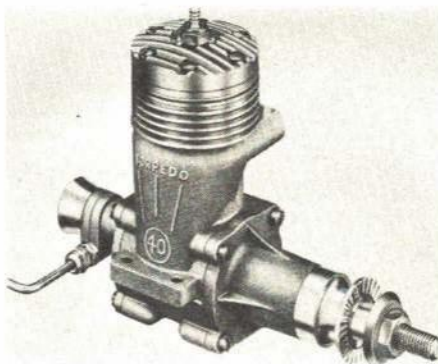
## NEW PRODUCTS CHECK LIST

Write the manufacturers for more data; tell them, "I saw it in American Aircraft Modeler."

**AMT Corp./New 1/72 Plastic Kits.** First of these is the Army's workhorse Huey Helicopter. It's used for troop transportation, rescue and ground attack and support. AMT's UH-1D is equipped with two pilot figures, moveable doors and rotors, grenade launchers, 7.62mm Miniguns and Vulcan 20mm automatic cannon. Authentic 1st Cav. and Canadian decals included. Assemble it as a gun-ship or troop transport. Kit, A-634, is \$1.00.

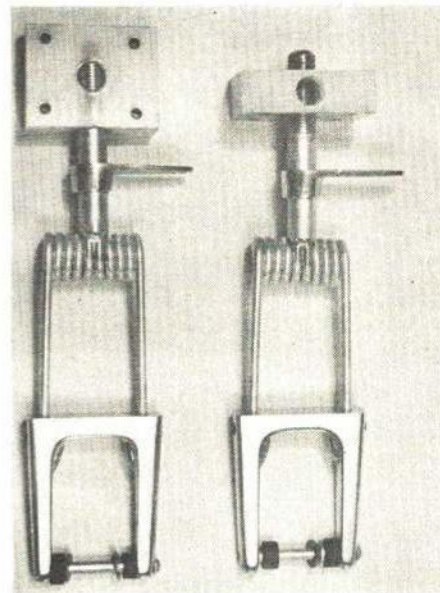
Second release is the B-47E. It's billed as a giant kit (wingspan is 19.3 and length is 18.7 in.). Control surfaces are well-detailed; there are realistic figures, optional position landing gear and bomb bay doors. Two fuel drop-tanks, 24 bombs and authentic decals included with each kit. Price of the A-671 kit is \$6.00. Write: AMT CORP., 1650 10th St., Santa Monica, Calif. 90404.

**Rocket City R/C Specialties/Fuel Tubing.** Look for this new tubing at dealer. Rocket City claims that this fuel line is more flexible and will not harden as other plastic types; it will stay flexible in zero degree weather; will not deteriorate as latex tubing; is crystal clear; forceps and pliers will not damage it and it will fit .19's or larger size engines. Query: ROCKET CITY R/C SPECIALTIES, 1901 Polk Drive, N.E., Huntsville, Ala. 35801.

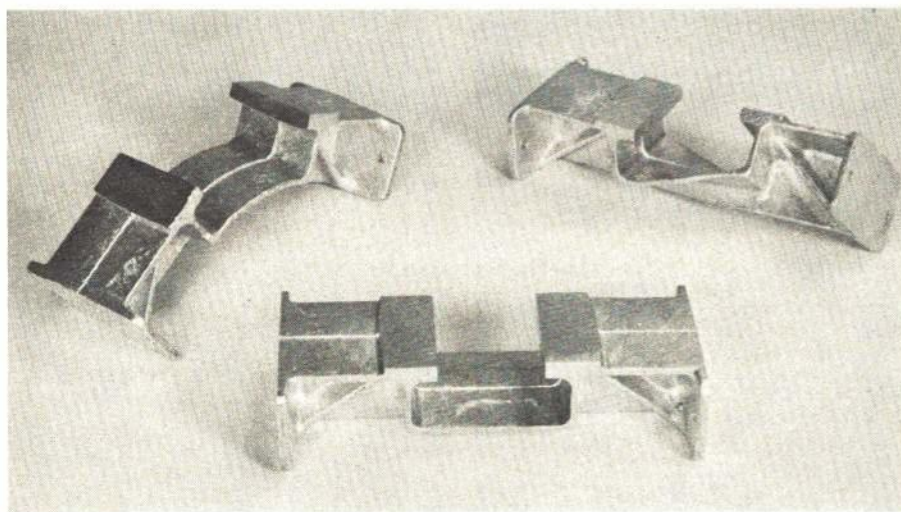


**K & B/New Engines For '69.** Four new Torpedo .40 engines have been developed and are now classified as "Series 69." They are the Torpedo .40 and the Torpedo .40RC. Both are available as "Series 69F" or as "Series 69R." The 'F' designates front rotor; the 'R' indicates rear rotor. All have a new milled by-pass and large throat carburetor for better performance and more power. K & B's exclusive no-tension single ring and aluminum piston is standard. Prices — front rotor types are \$26.95 and \$30.95; rear rotor engines \$28.95 and \$32.95 respectively. Write: K & B MANUFACTURING CO., 12152 Woodruff Ave., Downey, Calif. 90241.

**Williams Brothers/Vickers Machine Gun.** Authentic in every detail is this 2" scale WWI English Machine Gun. It's the latest in the Williams' line of accessories. The Vickers is of durable, molded styrene. In kit form, at \$1.25 each, they are easy to assemble. The 1" and 1½" scale sizes will be available soon. Later in the year, look for scale Lewis, Spandau and Parabellum Machine Guns. Write WILLIAMS BROS., 6719 Salt Lake, Bell, Calif. 90201.



**Tatone Products/Double Strut Steerable Nose Gear.** That's a mouthful to let you know about Tatone's new deluxe landing gear. Four kinds of mounts are offered: shown above are the bulkhead and belly mounts with Nylon pads. They're priced at \$8.95 each. Last two types have the steerable gear pivoting in an aluminum engine mount. One mounts the engine upright — the other is a side mount. These cost \$9.95 each and can be obtained drilled or undrilled. With all four the coiled struts of tempered wire are plated and soldered to a 3/8" dia. steel shaft. Top end of the shaft is threaded and fits into the mount, allowing minor height adjustments. A husky 8-32 set screw locates the steering arm. Cast aluminum wheel brackets hold either slick or round, 2-3" dia. wheels. Bracket set screws allow a 3/4" adjustment of the struts. If you want a friction drag brake effect, merely tighten the axle bolt. Right now the gear/motor mount units come in two sizes: .45 to .59 and .60 to .74. Smaller sizes to be available soon. All hardware is included. TATONE PRODUCTS, 4719 Mission St., San Francisco, Calif. 94112.



**Octura Models/60 Motor Mount.** Latest 60 mount from Octura, shown in foreground of photo, is of a high-strength aluminum alloy. Those mounts in back have been bent and twisted to show the resistance to breakage. Weight is 4½ oz. and it will handle engines down to .29 in size. Mount is 5"

wide; end plates are 2½ x 1½". These plates are drilled to clear 6-32 screws. Though the engine mount pads are not drilled, four socket-head 6-32 screws are included with the mount. Price is \$3.95 plus 10% for postage. Write: OCTURA MODELS, 8148 Milwaukee Ave., Niles, Ill. 60648.

*Continued on page 40*



# OUT OF THE PAST-INTO YOUR FUTURE!

## NEW SEMI-SCALE R/C KITS FROM AIRTROL!

Fly well with any kind of radio gear from single channel to full proportional equipment. Kits feature vacuum-formed high-impact fuselages . . . molded foam wings and stabilizers. Pre-cut parts. Need no finishing. Cement included in all kits. Less than 3 hours assembly time per kit. Immediate delivery.



**\$24<sup>95</sup>**

### Airtrol ALBATROS Kit #AB-1

A beautiful model of one of the first successful, highly maneuverable combat/scout planes of World War I. 44" wing span. For .10 to .15 engines. Weight: 32 ozs. (less engine and equipment)



**\$21<sup>95</sup>**

### Airtrol MORANE-SAULNIER Kit #MS-1

Another World War I pioneer . . . first to shoot through its propeller. 42" wing span. For .10 to .15 engines. Weight: 22 ozs. (less engine and equipment)



**\$21<sup>95</sup>**

### Airtrol MESSERSCHMITT Kit #ME-109

A faithful kit of the fast, deadly fighting machine of World War II. 44" wing span. For .10 to .15 engines. Weight: 22 ozs. (less engine and equipment)



**\$15<sup>95</sup>**

### Airtrol CESSNA Kit #150K

Extremely smooth handling . . . easy to assemble and fly. Ideal for the beginner. 44" wing span. For .099 to .15 engines. Weight: 24 ozs. (less engine and equipment)

## AND HERE'S THE R/C GEAR TO FLY THEM!

**AIRTROL GL-100** Lowest price "Galloping Ghost" on the market. Ideal for the beginner. Simplest and smoothest ghost actuator. 3 functions—rudder, elevator and motor control. 27 mc. freq. Superhet receiver. No wiring necessary . . . simply plug into switch harness. 56" center loaded antenna. Wt. (airborne equip.) 8 ozs.

**\$99<sup>50</sup>**



**AIRTROL R-11** Non-flopping, single channel, pulse control. One function—rudder only. Designed for aircraft up through .19, 27 mc. freq. Superhet receiver. 56" center loaded antenna. Complete less batteries. Wt. (airborne equip.) 6 ozs.

**\$69<sup>50</sup>**



If your dealer cannot supply you—send for FREE literature and prices.

# AIRTROL of ADRIAN

P.O. BOX 392 • 360 MICHIGAN AVENUE • ADRIAN, MICHIGAN 49221



## TRY YOUR DEALER FIRST

### ALABAMA

Alabama, Birmingham 35211  
SPIVEY STORES  
1301-03 Tuscaloosa Ave.  
Alabama, Huntsville 35805  
HUNTSVILLE HOBBY SHOP  
2100 Triana Blvd.

### ARIZONA

Arizona, Phoenix 85012  
WEBSTER'S HOBBY SHOP  
521 E. Camelback Rd.

### CALIFORNIA

California, Burbank 91505  
J & A HOBBY LOBBY  
3512 West Victory  
California, Covina 91724  
COVINA HOBBY CENTER  
140 North Citrus  
California, El Cajon 92020  
MIKE'S MODEL SHOP  
229 E. Main  
California, Eureka 95501  
KING'S HOBBIES  
318 W. Harris  
California, Pleasant Hill 94523  
OAK PARK HOBBY CENTER  
1902 Oak Park Blvd.  
California, San Diego 92103  
HILLCREST HOBBY CRAFT  
3821 Fifth Ave.  
California, San Jose 95128  
HUSTON'S HOBBY SHOP  
930 Town & Country Village  
California, Watsonville 95076  
McKELL DRUG CO.  
Alta Vista Shopping Center  
40 Mariposa Avenue

### CANADA

Canada, Richmond, British Columbia  
D AND R HOBBIES  
1130 Williams Road  
Canada, Calgary, Alberta  
CALGARY HOBBY SUPPLY  
Box 3173 Postal Stn. B  
Canada, Prince Rupert B. C.  
PRINCE RUPERT R/C CENTRE  
936 6th Ave. East  
Canada, Saskatoon, Sask.  
SASKATOON RADIO CONTROL CO.  
Box 1625  
Canada, Toronto, Ontario  
KLEIN BROS. SPORTS & HOBBIES  
3167 Bathurst  
Phone RU 7-6531

### COLORADO

Colorado, Denver 80220  
TOM THUMB HOBBY CENTER  
7020 East Colfax  
Colorado, Pueblo 81001  
D & S PAINT CENTER INC.  
217 West 9th Street

### CONNECTICUT

Connecticut, Bridgeport 06605  
BOB'S HOBBY SHOP  
1542 Wood Avenue  
Connecticut, Bridgeport 06610  
FRED'S VARIETY  
184 Success Ave.  
Connecticut, Hamden 06514  
HAMDEN HOBBIES  
1564 Dixwell Ave.  
Connecticut, Windsor Locks 06096  
SKIPS ELECTRONIC SERVICE CT.  
9 Spring Street

### DELAWARE

Delaware, Wilmington 19803  
SIMPSON'S HOBBIES INC.  
709 Faulk Road  
Faulk at Murphy Road

### FLORIDA

Florida, Jacksonville 32211  
ART'S HOBBY SHOP  
10234 Atlantic Blvd.  
Florida, Miami 33142  
ORANGE BLOSSOM HOBBY SHOP  
1975 N. W. 36th St.  
Florida, Port Salerno 33492  
WILSONS HOBBIES  
P.O. Box 262  
Florida, St. Petersburg 33704  
FLORIDA HOBBIES & RACEWAY  
2801 9th St. No.  
Florida, Tampa 33605  
FARMERS SUNDRIES & HOBBIES  
4926 East Broadway

### HAWAII

Hawaii, Honolulu 96814  
PETE'S MODEL CRAFT FUN SHOPPE  
1042 Ala Moana Shopping Center

### ILLINOIS

Illinois, Barrington 60010  
LANGE'S BIKE SHOP  
120-A West Main Street  
Illinois, Chicago 60630  
STANTON HOBBY SHOP  
4736 North Milwaukee Avenue  
Illinois, East St. Louis 62205  
EAST SIDE HOBBY SHOP  
2303 State Street  
Illinois, Mundelein 60060  
HOBBY HUT  
1411 1/2 Seymour Ave.  
Illinois, Sycamore 60178  
TRI-HOBBIES  
118 So. California St.  
Illinois, New Lenox 60451  
RADIO MODELS  
321 Willow Street

### KANSAS

Kansas, Shawnee 66203  
KEN'S R/C HOBBY SHOP  
10915 W. 59th Terrace  
Kansas, Salina 67401  
FLIGHT CONTROL PRODUCTS  
1937 Simmons

### MASSACHUSETTS

Massachusetts, Attleboro 02703  
HOBBY HUT  
170 Pine St.  
Massachusetts, Cambridge 02138  
CROSBY'S HOBBY CENTRE  
1704 A Massachusetts Ave.

### MICHIGAN

Michigan, Dearborn 48126  
JOE'S HOBBY CENTER  
7845 Wyoming Ave.  
Michigan, Lapeer 48446  
CLIFF'S HOBBY SHOP  
317 So. Saginaw St.

### MISSOURI

Missouri, Affton 63123  
AFFTON HOBBY SHOP  
8627 Gravois  
Missouri, Des Peres 63131  
DES PERES HOBBY SHOP  
12065 Manchester Rd.  
Missouri, Kansas City 64110  
K C HOBBY CENTER  
5717 Troost  
Missouri, St. Joseph 64503  
POLLOCK REF. & MODEL SUPPLY  
1501 South 10th

### NEW JERSEY

New Jersey, Greenbrook 08813  
(Plainfield Area)  
TINY TOTS INC.  
U.S. Route 22 E  
New Jersey, Red Bank 07701  
HOBBY HEADQUARTERS  
62 White Street

### NEW YORK

New York, Buffalo 14215  
FIELDS HOBBY CENTER  
3177 Bailey Avenue  
New York, Rochester 14623  
COMMUNITY HOBBY CENTER  
1475 E. Henrietta Rd.  
New York, Syracuse 13202  
MODEL RAILROAD AND  
HOBBY CENTER INC.  
219 East Fayette Street

### NORTH DAKOTA

North Dakota, Minot 58701  
MERYL'S HOBBY SHOP  
124 1st Street S. E.

### OHIO

Ohio, Cleveland 44129  
NATIONAL HOBBY INC.  
5238 Ridge Road  
Ohio, Columbus 43211  
LINDEN HOBBY & BIKE  
2458 Cleveland Ave.  
Ohio, Lancaster 43130  
SLATERS INC.  
1141 N. Memorial Dr.  
Ohio, Ohio City 45874  
GLENMORE HOBBY SHOP  
RR #1  
Ohio, Willoughby 44094  
KIRTLAND HARDWARE & HOBBY SHOP  
Route 306 Kirtland  
Ohio, Youngstown 44512  
BOARDMAN HOBBY CENTER  
7411 Market Street

### OREGON

Oregon, Portland 97217  
HOBBYLAND  
4503 N. Interstate Ave.

### PENNSYLVANIA

Pennsylvania, Harrisburg 17110  
HEN'S HOBBY HOUSE  
2955 N. 7th St.  
Pennsylvania, Monroeville 15146  
LORESKI'S HOBBY SHOP  
"Miracle Mile" Shopping Center  
Pennsylvania, Philadelphia 19143  
RICHARD FRANCIS HOBBIES  
5815 Woodland Avenue  
Pennsylvania, Upper Darby 19082  
TODD'S MODEL SHOP  
7036 Terminal Sq.  
Pennsylvania, York 17404  
SKELLY SPORTING GOODS  
2227 West Market St.

### SOUTH AMERICA

South America, Bogota 2, Colombia  
AEROMODELS BRITANNIA, LTDA.  
Apartado Aereo 21030

### TEXAS

Texas, Austin 78704  
LEWIS HOBBY SHOP  
1704 South Congress  
Texas, Corpus Christi 78410  
MODEL SERVICE  
Box 10136  
Texas, Houston 77005  
E & C HOBBY SHOP  
2522 Times Blvd.  
Texas, San Angelo 76901  
WILSON'S HOBBY SHOP  
2205 W. Beauford  
Texas, Victoria 77901  
ANN'S HOBBIES & ART SUPPLIES  
1308 Polk off N. Laurent

### VIRGINIA

Virginia, Richmond 23221  
BOB'S HOBBY CENTER  
3002 West Cary Street

Ace R/C Inc.

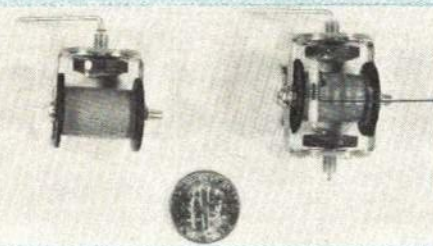
# ACE R/C

SERVES YOU FOR ANY R/C NEED  
SERVING YOU SINCE 1953



## FOR THE NEW MINI PLANES

Looking for new R/C ventures? Join the swing to the new mini planes which have appeared in recent model magazines. We specialize in the light weight components you need for these jobs. You will find listed just a few of the items we have now—more are being added regularly. Join the swing to fun—build 'em small and have a ball!



## ADAMS AR BABY ACTUATOR

From Adams comes the AR Baby actuator. Has a lower drain for an over-all lighter weight. Designed for 3 volt use with light weight cells. Draws only 50 ma, making alkali cells an ideal choice for a tremendous savings in weight. Uses the same frame and is the same size as the regular Baby; the secret of the weight saving is in current consumption. Weight of the AR is 17 grams.

No. 14K31—Adams AR Baby Actuator.....\$8.45  
For the modelers who have the regular Baby and want to convert to lower drain coil, we have it separately. Conversion is simple and takes only a few minutes with hand tools.  
No. 14K32—Adams AR Coil only.....\$4.00

## TWO NEW BABY TWIN ACTUATORS

The Baby Actuator by Adams is now available as a Twin in either the regular or AR version. The twin magnets provide approximately 2 1/2 to 3 times the torque of the single units and increase weight only slightly. The regular and AR Baby weigh approximately 17 grams, while the Twins weigh 22 grams.

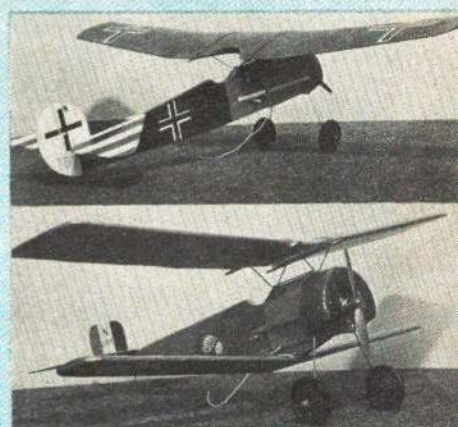
The regular Baby Twin has the most torque and pulls around 110 mah on 2.4 volts, while the AR version pulls 40 to 50 mah at 2.4 to 3 v. The AR is designed for the Micro and Mini series of planes where weight is important and smaller batteries are used to keep overall weight as low as possible.  
No. 14K58—Adams Baby Twin, regular coil.....\$10.95  
No. 14K59—Adams Baby Twin, AR coil.....\$11.45

## ACE

## Accessories Components Equipment

Whether it's Tuffline fuel tubing, or a 2/56 x 1/8" machine screw, or an item from almost any major manufacturer, the chances are good that Ace has it in one of the most comprehensive lines of Accessories, Components or Equipment available anywhere. Our own designer-approved radio kits are added to by lines from E-K, Bonner, Lanier, Midwest, Bee Line, SPL, Coverite, Jensen, Rocket City, Su-Pr-Line, Sterling, MRC, Enya and Webra, etc., etc., etc.

## NEW!



## PROFILE R/C PLANS AVAILABLE

Full size plans for the Mini Profile R/C planes are available now for the Fokker D-VIII and Nieuport 17. By Chris Soenksen. Detailed in our Ace R/C Data Supplement 69-2 Picture Story, they scored a hit. Plans are offset printed and are 17 x 22". Price includes First Class Mailing. More plans will be coming—watch for them. Join in the latest challenge to hit R/C—build a Mini Profile. Average span is 25 inches and area about 120 squares.  
No. 13K31—Fokker D-VIII Profile Plans.....\$1.00  
No. 13K32—Nieuport 17 Profile Plans.....\$1.00

## SPECIAL OFFER

Until August 31 we will offer your choice of the above plans FREE with the purchase of a Commander R/O Baby Pulse Package. Offer is limited—and you MUST ask for it.

## MICRO FLEX HOOKUP WIRE

You need a lighter weight wire than ordinary hookup when building the miniature jobs. We have #30 PVC insulated with 7 strands of #38 only .033 diameter. Packaged in a Six color pack each length is three feet long.  
No. 35K3—Six Pack hookup wire #30.....\$1.00

## VOGT THROTTLE RESTRICTORS

These are a must when you want to tame the Cox .010 or .020. Simply set to position for the desired RPM and you have a tame power plant that is just the ticket for the new mini scale and semi-scale planes. Be sure to order the correct one for your engine—not interchangeable.  
No. 16K105—Vogt Restrictor for .010.....\$2.00  
No. 16K173—Vogt Restrictor for .020.....2.00

## COMMANDER PULSE

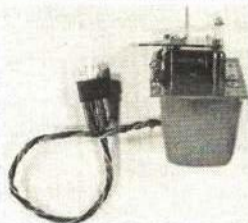
## DE SUPERHET RECEIVER

This is the first superhet receiver to be produced by Ace R/C! And it is a first in many respects: Small—measures only 1 1/4 x 1 1/4 x 1/4". Light-weight is about .8 ounce; Relayless—built double-ended (DE) with 1 amp transistors in output for hookup direct to dual coil actuators. Low voltage—works reliably at maximum range on just 2.4 volts; Versatile—works with most any transmitter of from 400 to 1400 hz; Pulses—exceptionally fast.  
Manufactured by Ace exclusively under license agreements with designers—several circuit breakthroughs found only in this unit.

No. 12K1—Commander DE SH RX Pulse Assembled.....\$26.50

(Specify frequency: 26.995, 27.045, 27.095, 27.145 or 27.195)





## R/O PULSE MOTOR CONTROL

Now you can add motor control to your Commander RO Packages. May be used for Testor System. The high Pulse Rate Motor Control by Ken's R/C uses four wires to hook up to your pulse installation, and is complete with a three position spring wound escapement to give you high, medium and low motor control on a throttle valve engine.

Entire unit weighs 1.1 ounce with leads, completely wired and tested. The high pulse rate required is approximately four to seven times the rate normally put out by your pulse transmitter. For the Commander RO Package, a simple conversion kit, which consists of an extra capacitor and a pushbutton switch allows the high pulse rate to be added economically and easily. Motor command does NOT affect rudder positions.

No. 16K63C—Ken's Motor Control with escapement, \$19.95

## COMMANDER R/O TX CONVERSION KIT

Conversion kit for the Commander RO transmitter, as described above, complete with instructions, and all components required.

No. 15K62—HPR (High Pulse Rate) Kit for Commander, \$2.50

NEW! NEW! NEW!

## VERSAPRO

Fred Marks

Components and Parts Packages for all of the Versapro Systems as detailed in American Aircraft Modeler are available. Sent with all new catalogs or separate listing available — send a stamped self-addressed envelope.

**SERVO MECHANICS**—Controlaire S-3 and S-4 and Kraft-Hayes KPS10. For the tinkerer to make his own digital or analog servo. All are complete with motor, feedback pot, gears, shafts, output hardware, etc. S-3 and S-4 in easy to assemble kit form; KPS10 preassembled. Mechanicals only, no electronics. No. 14K17—S-3 \$9.98; No. 14K18—S-4 \$8.98; No. 14G55—KPS10 \$13.95

**LAHTI ANALOG SERVO ELECTRONICS**—Complete kit of all electronics needed to make an excellent analog servo with highest resolution from S-3, S-4 or KPS10 mechanics. Use it with the AAM decoder for simple rudder only NON-FLAPPING control. No. 15G31—Lahti Analog electronics only kit, \$11.95

**AAM PULSE AMPLIFIER-FILTER** provides the analog signal required from the Commander DE receiver for use with analog servo. This provides proportional with no flapping of the surface. Much more powerful and uses current only when servo is in motion so smaller batteries may be used. Kit contains PC board, transistors and components for filter. No. 15G24—AAM Analog Pulse Amplifier Filter \$6.95

## MINI GG ACTUATOR PACKAGE

Don Snull designed this GG actuator for Rudder and Elevator for .010 to .049 ships, and we are proud to present a kit of all components required. Weight is approximately 35 grams and measures 2 x 1 1/8 x 1 3/8". Current drain is approximately 70 ma on 1.2 volts.

Kit contains low drain five pole motor as used in digital servos, synthane base plate, all hardware, including gears, etc., as well as simplified instructions to allow you to complete in less than 1 hour.

For use with relay receivers, or with the Ace AOSM kit with almost any relayless receiver on one set of batteries for savings in weight.

No. 14K28—Mini GG Actuator Package.....\$7.95

## COMMANDER R/O PULSE PACKAGES Ideal for Beginners and Sports Fliers

This is the R/C HIT of 1969! We felt the acceptance would be good, but we hadn't visualized the phenomenal demand! Simple Single Channel is on the upswing, but definitely!

The Commander R/O packages contain the Commander DE 2.4 superhet receiver, Commander Pulse Transmitter, Adams actuator size of your choice, and nickel cads, wired with on-off switch. AND each package saves you \$10.00 over buying components separately.

The R/O Packages are available in 3 sizes for most sporting needs from the smallest to the larger aircraft—or boats. Ready for installation, completely wired and tested.

The Baby is for .010 to .020 jobs. Has two 225 ma Nickel Cadmiums and the regular Baby Adams. Airborne weight is 2.5 oz.

The Standard uses the LV Single Adams for more power for .049 to .07 size. Uses larger capacity nickel cads. Airborne weight is 4.5 oz.

The Stomper uses the LV Twin Adams actuator for up to .15, or can be boosted for use with .19. Airborne weight is 4.9 oz.

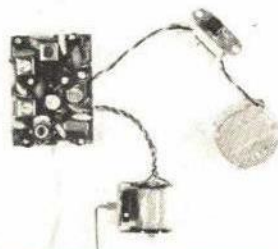
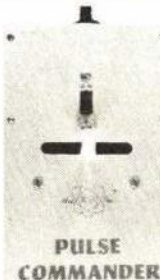
(Charging equipment extra)

No. 10G15—Commander R/O Baby pkg.....\$69.95

No. 10G16—Commander R/O  
Standard pkg. .... 71.95

No. 10G17—Commander R/O Stomper pkg. 74.95

Available all 27 MHz, except 27.255. Specify.



## PROVEN WINNER! ACE VARI-CHARGER



### IN KIT FORM OR ASSEMBLED

Will charge nickel cadmium batteries—20 mils to 150 mils. Capable of charging up to 12 volt packs. Indexed dial & simple chart for correct milliamp reading for charging different size battery packs. Completely isolated from AC line supply. An extra deluxe item. New transformer of highest quality. UL approved line cord. On-off switch. 500 milliamp diode. Full instructions.

No. 34K21—Ace Vari-Charger assembled ....\$8.95

No. 34K22—Ace Vari-Charger Kit ..... 7.50

## NEW HANDBOOK-CATALOG FOR 1969! For the Fun Flyer and Tinkerer

Our 1969 Handbook-Catalog is bigger and better than ever. We specialize in equipment for the Beginner, Sunday and Fun Flyer. More items for the do-it-yourselfer; more products from most major manufacturers, in addition to many Ace exclusives. Greatly enlarged HANDBOOK section. Last year this was called "bible for R/C", "a MUST!" by R/C editors. Price is just \$1.00 POST-PAID. This is completely refundable on your first order! And that order also puts you on our mailing list for our newsletters and R/C Data Service — acclaimed the world over. You can't lose—send your buck on a round trip today. It could be the best dollar you ever spent!



It's Bigger!

It's Better!

ACE RADIO CONTROL • BOX 301 • HIGGINSVILLE, MISSOURI 64037

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

QUANTITY	STOCK #	NAME OF ITEM	PRICE	TOTAL

Important: For overseas delivery on catalog or Binder please add 50¢ for additional postage.

Guaranteed delivery anywhere. Orders over \$5.00 sent prepaid. Orders under \$5.00 please add 50¢ for postage and packing.

## GG PACKAGE #2

The Ace GG Package #2 is the lightest and most reliable Galloping Ghost unit on the market today. Thoroughly flight proven, the package uses Don Dickerson's See Saw Switcher which is unique in that it develops full power with only 2.4 volts.

The See Saw Switcher was expressly designed for use with the Ace Commander DE Superhet receiver which is winning critical acclaim from R/C fans all over the world.

Add to this, the updated Jansson transmitter which has been revised to provide clean RF output and you have a truly outstanding package.

The airborne pack has the Switcher, charging jack, on-off switch and Rand LR3 mounted on an epoxy PC panel measuring 2 1/4 x 4 1/2". The receiver and battery are connected to this board by cables. This allows best weight distribution. Total airborne weight is 5 1/2 ounces, yet the GG #2 works for engines up to .19 and has been successfully used with larger aircraft.

Batteries furnished are the GE 600 mah sintered self sealing vented cells for flights of approximately one hour per charge.

By buying the package you save almost \$20.00 over the individual component costs—AND you get the assurance of a matched and tested rig that will give you hours of pleasure and let you fly, fly, fly—!

No. 10G2—Ace GG Package #2 \$109.95  
(Specify frequency desired. All 27 MHz, except 27.255.)



# NEW PRODUCTS CHECK LIST

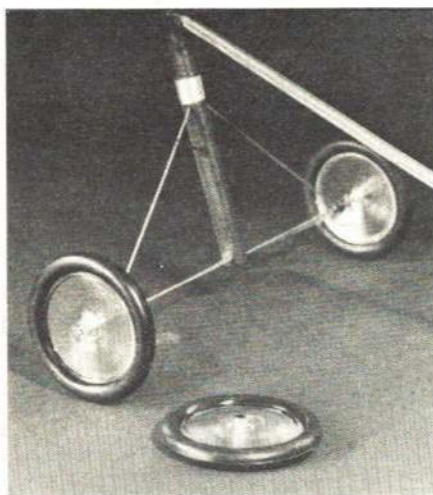
Continued from page 36

**Sterling Models/The Winder.** Many claim this to be the best control-line combat ship they've ever flown. New design features make possible, at 120 mph, incredible maneuverability. Wing span — 42½". Prefabrication of diecut and shaped parts means a fast and accurate assembly. Kit price is just \$4.95.

Sterling has followed their super, scale-detailed Stearman with another well-known aircraft, the WWI S.E.5a. Scale is 1½" to the ft. and it results in a span of 42½" — a good size for the radio gear in current use. Complete kit has balsa, plywood and maple accurately shaped and diecut. The landing gear and center wing struts are formed. Plastic parts — machine guns, portions of the cowl — are well-detailed. The hardware pack includes Nylon tube pushrods, control horns and bellcranks. Step-by-step instructions, layouts and drawings make assembly easy. Kit price is \$21.95. Write: STERLING MODELS, Belfield & Wister Sts., Philadelphia, Penna. 19144.



**Astro Flight/Malibu Sailplane.** This R/C glider was designed for towline use or as a slope soarer. Lightweight (16-18 oz. empty) airframe results from an all-balsa monocoque construction. Wing span is 76" and with a 12:1 aspect ratio, the area is 460 squares. A low-drag NACA 4412 airfoil is used on Malibu's wing. Flying weight will run 30-36 oz. Kit of pre-cut parts is easily and quickly assembled. Price is \$19.95 ppd. Write: ASTRO FLIGHT, INC., 2301 Cheryl Place, Los Angeles, Calif. 90049.



**W. C. Hannan Graphics/Vintage Wheels.** Hear this scale fans. These new wheels have the look of the vintage types seen on old-time aircraft. Centers of the lightweight yet strong wheels are clear plastic (you may even scribe on spokes if desired). Flexible tires are black. Three diameters available: 1, 1⅜ and 1½" at 65c, 75c and 98c per pair respectively. They will certainly save the

time and effort needed to build-up spoke wheels for your particular crate. By the way the same sizes are offered with opaque, gray centers at 59c, 69c and 89c per pair. Model car buffs might find these handy to use on classic autos — there are some of you that remember solid disc, auto wheels, aren't there?

W. C. Hannan Graphics also have a new catalog ready. Send them 25c to cover postage and handling. All of their items are listed — plans, things, Pirelli rubber and other goodies. W. C. HANNAN GRAPHICS, P. O. Box 1596, Escondido, Calif. 92025.

**Monogram Model/WWII Plastic Kits.** First of these is the 1½ scale Dornier DO172 German bomber. Early in the war this aircraft was used in the invasion of the Low Countries, Poland and France. Cockpit includes seats, floor, control column, instrument panel and crewmen figures. Assemble it with gear in flight or landing position. Price of kit PA214 is \$1.50.

In 1/48 scale is the British Hawker Typhoon. A dual purpose aircraft it was used as a bomber interceptor and ground support fighter. Cockpit interior is fully detailed with pilot. Assemble with canopy open or closed. Price of PA213 kit is \$1.50. MONOGRAM MODELS, INC., 8601 Waukegan Rd., Morton Grove, Ill. 60053.



**Product 60 Hobbies/Crash Resistant R/C Models.** This series uses a completely new, tough resilient plastic preformed fuselage. They are guaranteed by the manufacturer to be tougher than fiberglass and more survivable under impact than any other known plastic currently being used in preformed planes. First in this series is the Skylane 44 (at top). It's ideal for single channel and GG flyers. Suggested engine sizes are: .049 for rudder-only, .09 for galloping ghost or tiny digital and .15 for heavier radio gear. On the last size the wing should have spars installed (included with kit). Kit comes with assembled fuselage, Midwest

wing and stab. Just install motor, landing gear and hinging. Standard kit is \$21.95; deluxe kit, with wheel pants and strut covers, is \$24.95.

Next is the Comanche B with scale appearance and a performance that ranges from cool (scale) to hot (pylon racer). Manufacturer recommends engines from .15 to .35. Latter is advised for experts only. There is a choice of motor mounts so specify vertical, horizontal or inverted. All surfaces are covered and hinged. Wing and stab are styrofoam and covered. For additional details: PRODUCT 60 HOBBIES, P. O. Box 19133, Salt Lake City, Utah 84119.



# the hot ones in R/C

## NEW Heathkit® GD-19 5-Ch. Proportional System

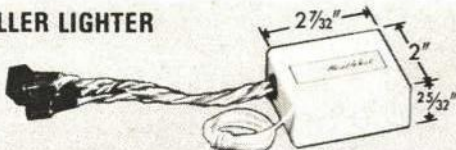


Same Low Price  
Only **\$219.95\***  
with 4 Servos

**New — smaller, lighter Receiver**  
**New — Kraft Control Sticks**  
**New — 3 choices of bands — 27, 53 or 72 MHz**

• Powerful transmitter has preassembled, prealigned RF circuitry • New 2.3 oz. miniature receiver features space-age ceramic filters in the IF for high selectivity, extra reliability and no IF alignment ever • Unaffected by noise or temperature variation • New Kraft control sticks with thumb lever coarse adjustment plus Trim Controls that Do Not change stick centering • Switch-locked transmitter prevents accidental turn-on • Collapsible antenna • New flat-pack rechargeable nickel-cadmium transmitter and receiver batteries • Exclusive Heath space and weight-saving military-type terminal blocks • High reliability variable-capacitor servos for extended life • Two linear outputs (one with vertical tabs) plus rotary • Easily reversed servo travel • Flight weight only 16 ozs. • Choice of five operating frequencies in each of three bands — 27, 53 or 72 MHz • Buy the complete system kit (supplied with soldering iron) ... easy to build and great savings over assembled gear ... or buy components separately — new receiver is fully compatible with previous Heathkit GD-47 R/C System

### NEW SMALLER LIGHTER RECEIVER



The new Heathkit GDA-19-2 receiver combines Heath engineering with extremely small size & weight to deliver unmatched performance and reliability. Ceramic filters for increased selectivity, extra reliability and elimination of alignment forever. Miniature size ... you can put this receiver places others won't fit. Light in weight ... flying weight of receiver and new flat-pack battery is only 6.2 oz. Highly sensitive, immune to noise, unaffected by temperature ... and available on five frequencies in any one of three different bands.

**System Kit GD-19**, all system parts; specify freq. desired; 11 lbs. ... **\$219.95\***  
**Kit GDA-19-1**, transmitter, battery, charging cord; specify freq., 5 lbs. ... **\$86.50\***  
**Kit GDA-19-2**, receiver only; specify freq., 1 lb. ... **\$49.95\***  
**Kit GDA-19-3**, receiver battery pack only, 1 lb. ... **\$9.95\***  
**Kit GDA-19-4**, one servo only, 1 lb. ... **\$21.50\***  
**Kit GDA-47-6**, plug conversion kit for using new GDA-19-2 receiver with previous GD-47 R/C System, 1 lb. ... **\$2.95\***  
**Complete Airborne System Weight:** 16 oz. (1 receiver, 1 receiver battery, 1 switch, and 4 servos). **Total Flying Time:** Four hours minimum (with batteries fully charged). **Operating Frequencies:** 27 MHz (11 meters) — 26.995, 27.045, 27.095, 27.145 & 27.195 MHz; 53 MHz (6 meters ... Amateur Radio operator's license required) — 53.100, 53.200, 53.300, 53.400 & 53.500 MHz; 72 MHz (4 meters) — 72.080, 72.240, 72.400, 72.960 & 75.640 MHz.

## NEW Heathkit® GD-69 "Thumb-Tach"



NEW  
Kit GD-69  
**\$19.95\***



### At Last An Accurate, Easy-To-Use Tachometer To Measure RPM's On Any Model Engine

The new Heathkit GD-69 "Thumb-Tach" Tachometer features all solid-state design and battery operation for long life reliability. And the "Thumb-Tach" is so low in cost, so functional, no modeler can afford to be without it. Can be used on model planes, boats, and cars.

**Accurate ... Doesn't Load Engine.** There's no mechanical or electrical connection between your engine and the GD-69 ... it measures RPM directly using reflected ambient light from the propeller or flywheel of your model ... operates even from several feet away.

**Simple To Use.** Just set the handy slide switch to the meter scale you want to use ... Low (0-5000 RPM) for idle adjustments or High (0-25,000 RPM) for top end RPM readings ... and aim the lens at the propeller or flywheel. The meter reads directly in RPM. Easily calibrated for single pulse inputs (marked flywheels) and two and three pulse inputs (two & three bladed propellers). A handy pull-out stand lets you use both hands for making engine adjustments too.

**Dozens Of Uses:** • needle valve adjustments • difference in performance from one fuel to another • difference in glow plug performance • adjust engines to manufacturer's RPM • select gear trains and props • indicates power loss due to aging or worn engine parts • shows changes in peak RPM that you can't hear • especially useful for free-flighters, where a few more RPM can be the difference between winning or losing. And the GD-69 is easy to build too ... just 2-3 hours assembly on one circuit board. Raise your engine performance now ... with the new Heathkit GD-69.

Kit GD-69, 1 lb. ... **\$19.95\***

**GD-69 SPECIFICATIONS** — Range: 0-500 RPM & 0-25,000 RPM. Light intensity: Dusk to bright sunlight. Pulse ratio: 1, 2, or 3 input pulses per RPM. Battery requirements: 9 V. NEDA #1604 (not supplied). Finish: Blue wrinkle. Accuracy: 3%. Dimensions: 1 1/2" H x 2 1/2" W x 5 3/4" L. Temperature range: 0° to 160° F. Net weight: 10 oz. less battery.



### NEW FREE 1969 CATALOG!

Now with more kits, more color. Fully describes these along with over 300 kits for stereo/hi-fi, color TV, electronic organs, electric guitar & amplifier, amateur radio, marine, educational, CB, home & hobby. Mail coupon or write Heath Company, Benton Harbor, Michigan 49022.

HEATH COMPANY, Dept. 80-7  
Benton Harbor, Michigan 49022

☐ Enclosed is \$ \_\_\_\_\_, plus shipping.

☐ Please send model (s)  
☐ Please send FREE Heathkit Catalog.  
☐ Please send Credit Application.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

Zip \_\_\_\_\_

\*Mail order prices; F.O.B. factory.

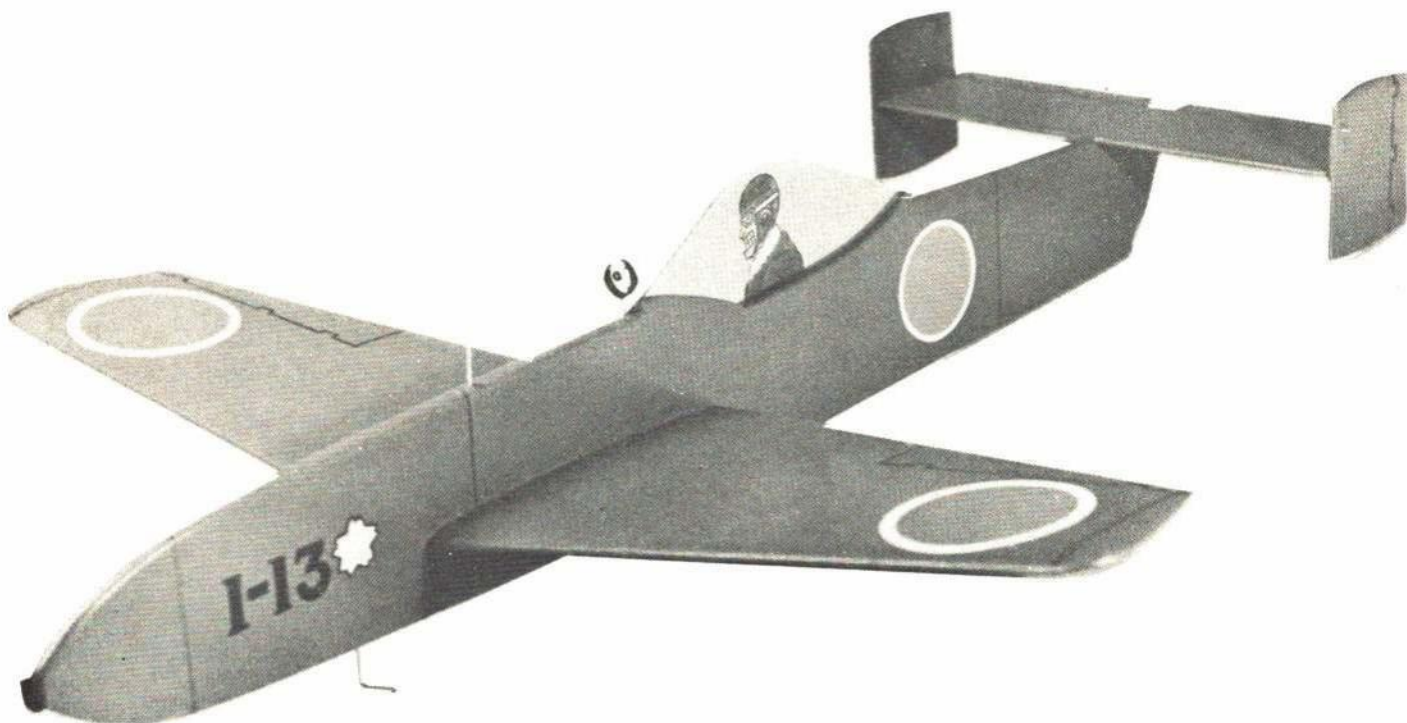
Prices & specifications subject to change without notice.

GX-183



a Schlumberger company





# Balsa Baka Bomb

Our profile version of this one-way, piloted bomb is  
launched by catapult; original was bomber-carried.

W. C. HANNAN

THE Japanese "Baka" series of piloted bombs were developed as an emergency effort, toward the later stages of WW II, in an attempt to thwart the Allied naval attacks. These little one-way bombers were generally carried by twin-engined "Bettys" to within about 50 miles of the intended targets, whereupon the Bakas were released to glide the remaining distance, assisted during the terminal phase by three rear-mounted rockets.

The U. S. Navy bestowed the name Baka (fool) upon the tiny machines, but the Japanese referred to them as "OKAs" meaning Cherry Blossoms. Some examples of these aircraft are still in existence. One is on display at the Ontario Air Museum, Ontario, California; another is in the Air Force Museum, Dayton, Ohio, and at least one more may be viewed in Southern Japan.

Although several variations of Bakas were produced (even a two-seater!), our little catapult glider is based upon the OKA-11.

**Construction:** Here's a chance to use up some of that heavy balsa wood left over from the last kit that you bought! This bird should be built from medium-hard or hard balsa, in the interests of ruggedness. Extra weight will merely mean that it will need to fly a bit faster.

**Fuselage:** Trace the outlines of the fuselage onto thin paper, which will serve as a template. Transfer the outline shape to a sheet of flat (not warped)  $\frac{1}{8}$ " balsa. Cut the fuselage to size, being careful to preserve the alignment of the wing opening

and stabilizer mounting area. The section of the fuselage beneath the wing is removed, to be replaced during assembly. Give the fuselage a good overall sandpapering, and round all corners to a smooth contour, with the exception of the stab mounting area, which is left square. Cut two cockpit canopy halves from fairly thick clear acetate sheet. A groove is made in the top of the fuselage to receive them.

**Wing:** A sheet of  $\frac{1}{8}$ " flat sheet balsa is used for the wing. After cutting the wing to outline, shape it to an airfoil section, as indicated on the fuselage side view. A razor plane and a sanding block will make short work of this operation. Slice the wing at the centerline, and bevel the inner sides to achieve the correct dihedral angle. Rub a little glue into each side, reglue, and block up one wing tip, while the joint dries.

**Empennage:** The tailplanes are cut to shape from  $\frac{1}{16}$ " sheet balsa, and sanded to a streamline cross-section. Be sure that the stabilizer ends are parallel, so that the fin-rudders will not toe in or out, when the model is assembled.

**Decor:** It is easiest to decorate the Baka before assembly. All surfaces are given two coats of sanding sealer, with sanding between coats. If commercial sealer is not readily available, you may make some from thin clear dope and talcum powder. We elected to apply only a minimum-type of finish, consisting of two coats of sealer, plus two coats of color, in the interest of saving time, rather than weight. The various lines which represent aileron, elevator, rudder separations and such, are drawn on with india ink or a ball-point pen. Don't omit these, or your model will look stark and unfinished. A coat of clear

dope will give the markings protection against moisture. The Japanese "meatball" insignias may be made from sheet decal material, or even paper disks, if you prefer. The small cherry blossom emblems are cut from pink-colored paper.

**Assembly:** Install the wing, being certain to check for correct alignment as viewed from the front and top, as well as the side. Don't spare the glue, because this joint will be subjected to severe stresses during catapult launches, and those occasional "dorks." Next, trim and install the lower section of the fuselage.

The fins may be glued to the stabilizer, bearing in mind the importance of keeping them parallel. The tail assembly may then be glued onto the fuselage, again checking for correct relationship. The decalage shown on the plans is recommended for good stability, but if you are more interested in top performance, particularly in respect to obtaining maximum altitude, the stab may be reset at or near zero degrees, in relation to the fuselage reference line. Naturally this will make launching much more critical, and is not recommended for beginners.

Sandwich the little folded paper pilot between the cockpit canopy halves, and insert the assembly into the fuselage groove. If desired, the various canopy frames may be simulated with strips of chart tape. Actually, the visual effect is quite good, even without them. Finally, as a finishing touch add the little ring and bead sights, which may be made from shim brass and wire.

**Flying:** Finishing nails or strips of solder are inserted into the fuselage nose as re-

*Continued on page 51*



1/8" SHEET BALSA WING

FIN IS NOT SHOWN ON THIS SIDE, FOR CLARITY

FOR ADDITIONAL BAKA INFO SEE:  
KAMIKAZE (AERO PUBLISHERS)  
MODEL AIRPLANE NEWS OCT. 1945  
HAWK PLASTIC KIT

# **FULL-SIZE DRAWING**

## **COLOR SCHEME**

OVERALL: PEA GREEN  
CIRCULAR INSIGNIAS: ORANGE-RED  
WITH WHITE OUTLINES  
"I-13": BLACK  
CHERRY BLOSSOM: PINK



FRONT VIEW  
(NOT TO SCALE)



SHEET ACETATE CANOPY

RING SIGHT

BEAD SIGHT

INSERT SOLDER OR FINISHING NAILS INTO NOSE FOR BALLAST

**I-13**

△ BALANCE POINT

THIS PORTION OF FUSELAGE IS REMOVED TO INSTALL WING

MUSIC WIRE LAUNCHING HOOK

1/8" SHEET BALSA FUSELAGE

1/16" SHEET BALSA STABILIZER

1/16" SHEET BALSA FIN (MAKE TWO)

# **Baka Bomb**

BY W.C. HANNAN

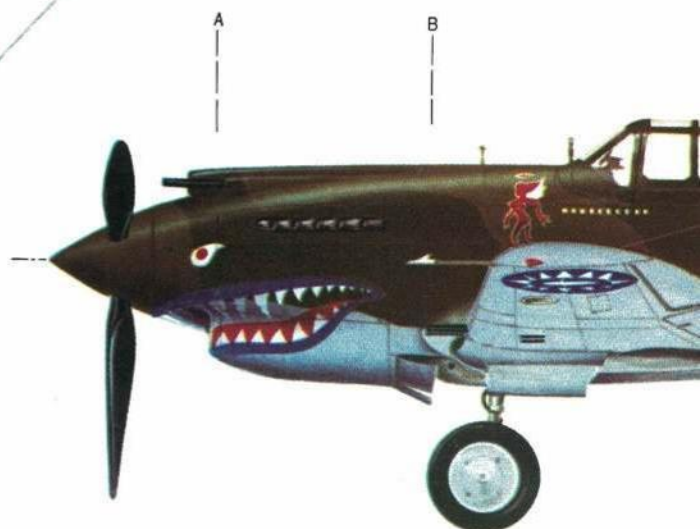
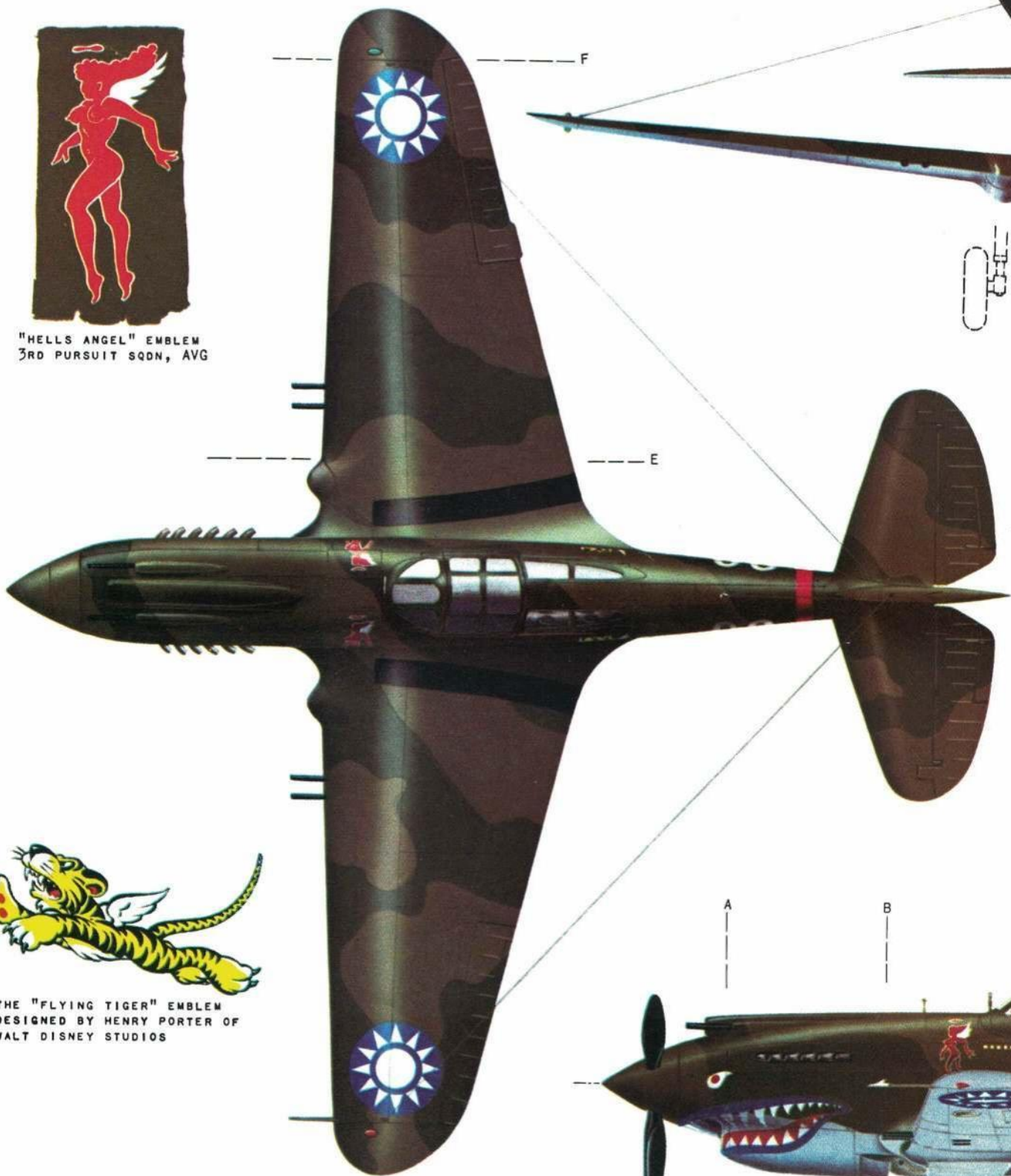
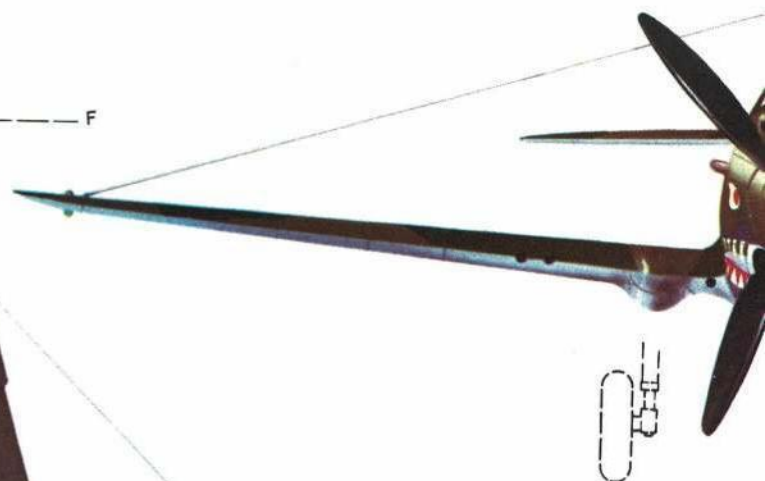




"HELLS ANGEL" EMBLEM  
3RD PURSUIT SQDN, AVG



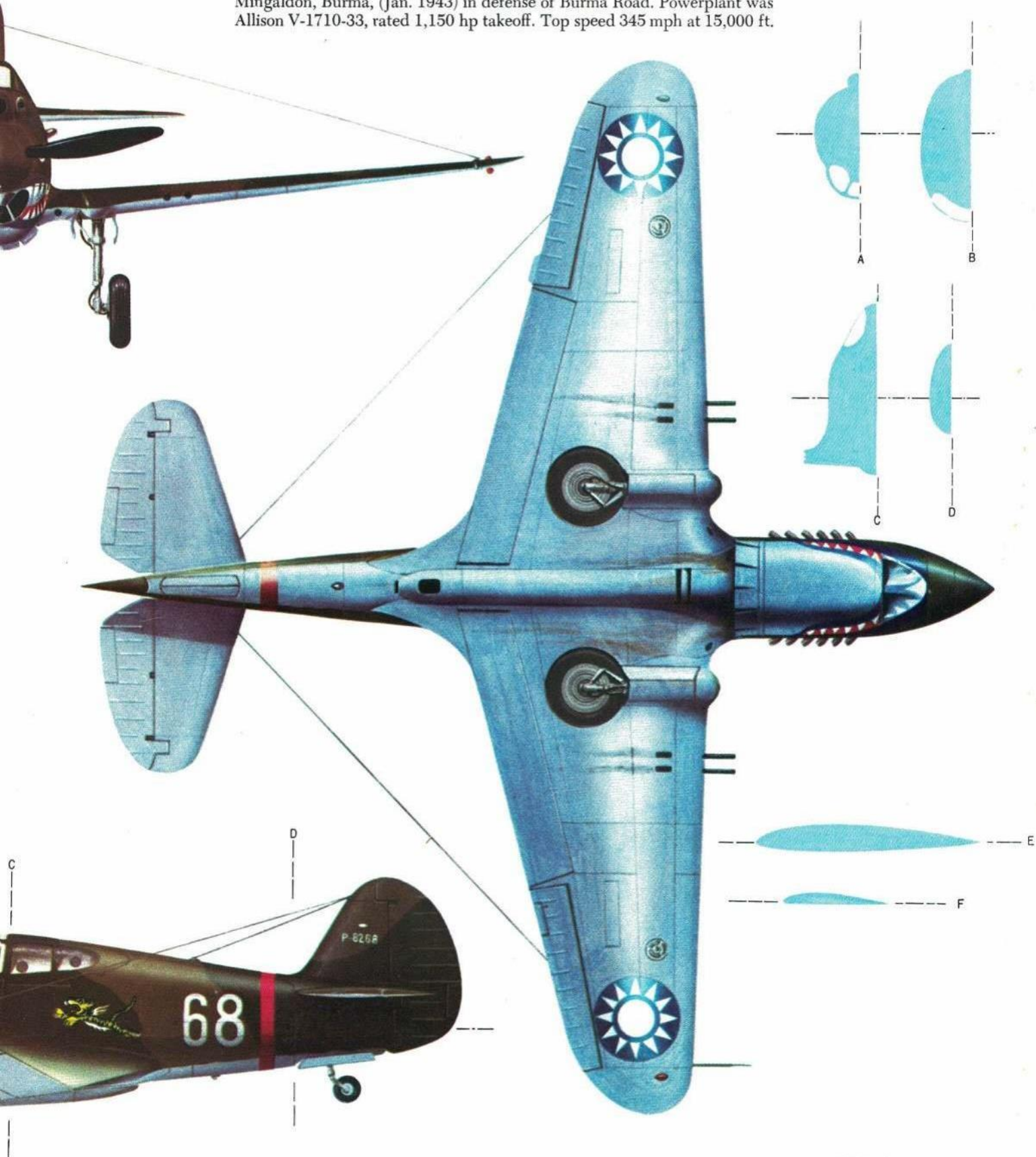
THE "FLYING TIGER" EMBLEM  
DESIGNED BY HENRY PORTER OF  
WALT DISNEY STUDIOS





## CURTISS HAWK 81 A-3 (TOMAHAWK) (P-40C)

Flown by C. H. Older, American Volunteer Group, 3rd Pursuit Squadron, Mingaldon, Burma, (Jan. 1943) in defense of Burma Road. Powerplant was Allison V-1710-33, rated 1,150 hp takeoff. Top speed 345 mph at 15,000 ft.



Edmund  
KATZ



# GETTING STARTED IN R/C

Glitches are not losses of signal, and are common only to proportional control systems.

HOWARD MC ENTEE

LAST month we saw that while a half-wave long antenna (roughly 18' for 27 MHz) is the best radiator, we can get along with one of only 3-5' on our transmitters. We also saw that an antenna held vertically has the "cleanest" antenna pattern—one that's reasonably predictable. Some European transmitters (notably those from Germany) are so constructed that when the flyer holds them at a handy angle in front of him, the antenna is practically vertical. However, you can't knock success; our U.S.A. transmitters held in any old haphazard way still do a fine job!

As frequency goes upward, electronic equipment becomes less efficient. But, antennas get shorter and therefore they become closer to the ideal half-wavelength. Even though we can load a short antenna to look like a half-wave to the transmitter, all loading schemes reduce radiation efficiency. At 72 MHz a half-wavelength is only about 7'—a quarter-wave near 3½'. This length may be had without loading, so our 72 MHz antennas are quite efficient.

Now, how about those glitches, which started all this discussion? The signal from your antenna doesn't reach your model like a clean beam from a searchlight. It bounces off the ground near the antenna, off nearby hills, off metal structures (metal building roofs, water tanks, electrical wires of all sorts). In Fig. 1 we see the main signal running to the plane direct, but how about all those bouncing sigs?! Those of you living near large cities know how a TV picture is affected when a large plane flies overhead. You don't entirely lose the picture, but it becomes very garbled for a

few moments. Why? Because the signal from the TV transmitter antenna is reaching your house antenna in a direct line, but it's also bouncing off the plane and reaching you at a very slightly different time.

Engineers say the two sigs are "out of phase." Thus, they partially cancel and your picture jitters wildly. The same thing happens with your model. One of those bouncing sigs is out of phase with the direct signal between antennas, and strong enough to cause a garbled signal in the receiver. This condition prevails for only a moment, but it's long enough for your plane to give a noticeable twitch. On planes whose receivers have fail-safe, you will probably hear the engine drop toward idle speed for a moment.

Glitches are not loss of signal. They can occur nearby or at a distance. It all depends upon the surroundings, to some extent upon the attitude of the plane, possibly on the attitude of the transmitter antenna. In familiar surroundings you can virtually predict where you will get a glitch. We recall one plane that would always do so (when flying at the local club field) when it was about 100' high and 500' away to the Southeast (above a certain clump of trees) and headed to our right in a sweeping turn. Probably the trees had nothing to do with it, but at that particular spot the reflections were just right to give a partial signal scrambling, and the plane wobbled for a few feet accordingly. Possibly a different antenna angle would have foiled that particular glitch—and shifting our flying position certainly would have done so. But the glitch just wasn't that bothersome to take the trouble!

Why do we get glitches with propo systems, when escapement and reed systems

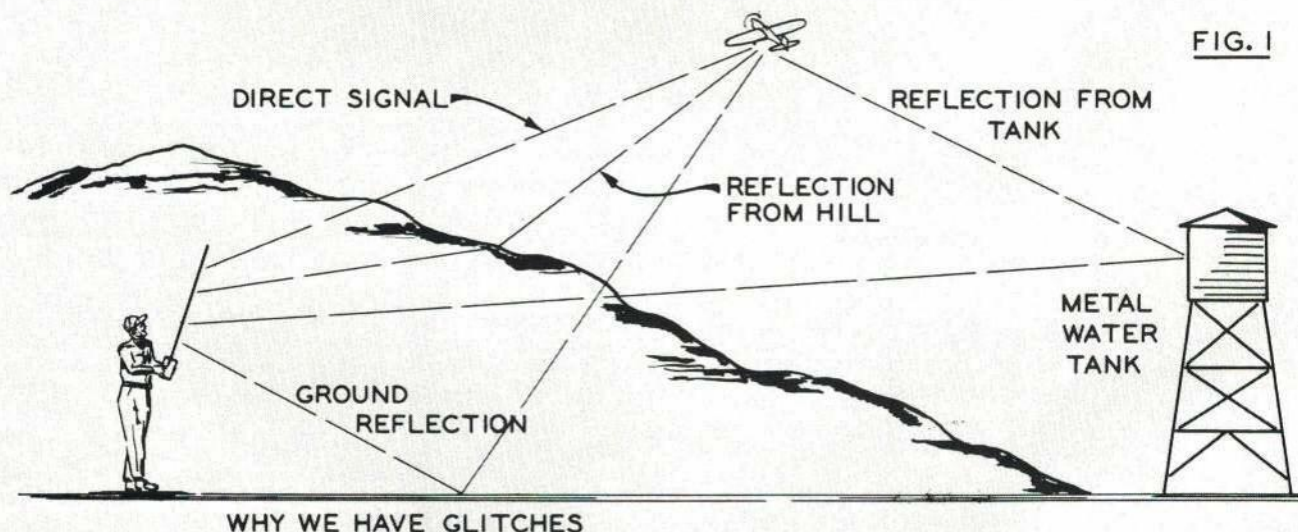
were never bothered? Simply because all propo systems, from the simplest pulse rudder to the most complex multi-digital, require a steady and uninterrupted train of signals from transmitter to model. Escapement and reed planes do not; much of the time they are flying straight and level. When doing so a signal cancellation or potential glitch would never be noticed. On the rare occasions when they were noticed, they were usually just considered to be passing interference.

Now, what about receiver antennas? Tuned antennas (that is, tuned via loading or otherwise to be a half-wave at the signal frequency) definitely give the best pickup—the most sensitivity and longest range. The truth is, we just don't need them. Super-regens will often quit working when hooked to a tuned antenna (it stops the input transistor from oscillating). But they are so sensitive that just a short wire will do a good enough pickup job. Superhets usually need longer antennas than regens, but again, not a full half-wave long.

Regens have only one tuning control, which sets the receiver frequency to match your transmitter; you have to do this tuning job to attain satisfactory operation. However, a superhet is internally tuned to the correct frequency by the crystal you insert. With matched transmitter and receiver crystals you will always get good reception at short range. At longer ranges you may not, unless you tune the antenna coil after the equipment installation has been completed in your model. Don't neglect this vital step, whenever you shift the receiver to a different model.

The most accurate tuning of any plane receiver is had when the plane is held off

*Continued on page 51*



Glitches are caused by slight cancellations of the transmitted signal. A reflected signal arrives at the plane but, having traveled a greater distance, it gets there later than the direct signal.

If the time of arrival of these two signals is enough out of phase, the receiver is confused and causes a glitch. Fortunately, the aircraft flies on and control is then quickly regained.





INTERESTED IN JOINING A.M.A.? Over 25,000 did in 1968. Membership details may be had by requesting FREE BROCHURE from above address.

## The AMA Executive Council Meeting

**When and where:** February 28, 1969; Toledo, Ohio.

**The agenda:**

**Nats events:** Following a report of the Nats Planning Conference (February 18-19 at Willow Grove Naval Air Station) by Nationals Executive Committee Chairman **Earl Witt**, a motion was made to accept the event schedule as previously presented to the Executive Council. **Approved unanimously.**

**Possible by-laws changes:**

**1. Disciplinary action.** Discussion noted that sportsmanship was the area of concern, particularly with competitive flying. Suggested was a temporary suspension instead of termination of membership. District II offered to present a specific proposal for future council action.

**2. Nomination procedure.** Discussion of Nominating Committee procedures, including various proposals for a primary election, revealed that a majority of council members were satisfied with previous basic procedures, but there was general agreement that a specific procedural document should be drawn up and publicized. A motion was made to add to the by-laws a statement to say that nominating procedures would be in accordance with a council-approved Nominating Procedures document which would be published 90 days prior to the meeting of the Nominating Committee. (Note: by-laws changes must be ratified by Leader member vote.) **The motion passed: Yes, 10; Abstain, 2.**

Next there followed a series of motions to provide a Nomination Procedures document to be effective for the 1969 election:

a) that the candidates for national office, president and secretary-treasurer, be limited to Leader members (including Contest Directors) who had served in the elective offices of the Academy and/or offices authorized by the by-laws for appointment by the president or vice presidents. **Approved unanimously.**

b) that requirements for candidates seeking the office of vice president would be as above, or any name endorsed by a currently chartered AMA club or active Contest Director. **Approved unanimously.**

c) that the Nominating Committee limit national officer candidates on the ballot to three and vice presidents to two; amended to two names plus write-ins. **The motion passed: Yes, 8; No, 4.**

District V noted for the record that he favors a primary type election but will go with the nomination procedures document for this year and will defer the primary question until later.

d) that the write-in provision for any elected officer of the Academy be provided, for members meeting the basic nomination requirements. **Approved unanimously.**

e) that the 1969 Nominating Committee meeting be held Wednesday night of Nats week at 8 p.m. at a site to be announced; also to be the cut-off time for accepting nominations. **Approved unanimously.**

**3. Adult Voting.** It was moved that the current council confirm the action taken by the 1968 council with regards to adult voting, but the motion was tabled, temporarily. It was then moved to submit to the Leader membership for vote a by-laws change which would revise the Junior category to be through age 14; with Senior to be age 15 through 18; Open to be age 19 and over. **Approved unanimously.**

An amendment to the previous proposal was offered to provide for Open member voting only, provided the proposal for lowering the age categories is accepted. **The motion passed: Yes, 8; No, 2; Abstain, 2.** The previous motion, as amended, with regard to confirming action by the 1968 council, was voted upon. **The motion passed: Yes, 9; No, 2; Abstain, 1.**

**CB standards:** The need was explained for a review of current policy concerning free memberships to CD's; noting various inequities. It was pointed out that a Contest Board study on the subject was underway. Action was, therefore, tabled pending the outcome of this study. Meanwhile the previous policy remains in effect.

**Special Junior clubs:** A special Junior club program was described as having run into some snags which needed to be worked out with the Philadelphia Recreation Department, hopefully in time for a report at the Nats Executive Council meeting. Council action was deferred until a further report could be made.

**PR proposal:** Patton read a letter from **John Clemens** applying for the position of part-time public relations officer. Discus-

sion followed after which a motion was made that Clemens' proposal be accepted on a limited basis, to be reviewed at the Nats for possible continuance. Salary and expenses were approved for four months (trial period mid-March to mid-July), with expenses for travel to Washington, D. C. for HQ visit to be authorized immediately. **Approved unanimously.**

**Redistricting:** **John Pond**, as Chairman of a previously appointed study committee, read his report on redistricting. The report concluded without recommending any district changes. Discussion followed concerning efforts in Districts II and III to resolve representation problems. Noted was a very recent meeting between District II AMA officers which had produced a recommendation that, instead of redistricting, a system of associate vice-president appointments be adopted. Further discussion revealed general council agreement favoring the associate VP idea. A motion was made to table the redistricting question in favor of associate vice presidents (up to four per district) to be appointed by the district vice president who would delegate all responsibilities except vote in council. **Approved unanimously.**

It was agreed that a letter would be sent by HQ to the selected individuals outlining their duties and responsibilities. Patton commended Pond on the thoroughness of his report.

**Scholarship program:** **Cliff Telford**, as chairman of AMA's Scholarship Committee, reported on progress of the scholarship program. He noted that the National Merit Scholarship Corporation would not be able to handle the Academy scholarship due to complications in candidate identification. He also noted the need for increasing the minimum standards for qualification. A



Present at the February 28 AMA Executive Council meeting at Toledo were (L to R) John Pond, representative of the District X Vice President; Bill Lank, Dist. VIII VP; Stan Chilton, Dist. IX VP; Earl Witt, Secretary-Treasurer; Lucille Ward, AMA HQ Office Manager; John Patton, President; John Worth, Executive Director; Jack Josaitis, Dist. VII VP; Jim Kirkland, Dist. V VP; Art Schroeder, Dist. II VP; Gosta Johnson, Dist. VI VP; Cliff Telford, Dist. IV VP.



motion was made requiring, as a minimum standard, that the applicant submit a certificate as evidence that he had flown a model in AMA sanctioned competition, to be signed by a current CD. **Approved unanimously.**

Instructions to initiate publicity regarding the first scholarship, to be awarded by the fall of 1970, were approved.

**Societies within AMA:** After discussion, which noted that the president had appointed a committee to study the question, and that the committee was to meet at Toledo the next day, no action was taken pending receipt of recommendations from the committee.

**Insurance program:** Insurance proposals were reviewed concerning fire legal liability and accident coverage. Discussion developed a basic agreement that clubs should not be asked to pay any more than current fees. It was also noted that the present insurance coverage already provided fire legal liability for all clubs except those which owned or rented property, and that the latter clubs could get this coverage individually (details to be publicized by HQ). Accident insurance was acknowledged to be more advantageous but should be considered for future programs rather than currently. No further action was taken on the

proposals.

**Long-term membership:** No action taken as discussion indicated no real advantage was apparent and that some problems in special handling would be involved.

**Distinguished Service Awards:** **Approved unanimously** were distinguished service awards for **Willis Brown** and **Walt Billett** for their efforts in compiling the AMA History; to **Bob Veir** for his efforts on behalf of the Academy, especially for his work on the AMA-HIAA-Navy Regional Meet Program. (Not until after the meeting was it learned that Billett had passed away several days before.)

**Hutchinson article:** A newsletter article regarding AMA's contract arrangement with *American Aircraft Modeler* was discussed, during which were considered various means of countering the article's implications. These were deferred in favor of publicizing the fact that AMA was open to offers from any publisher. It was proposed that a letter be sent periodically to all general interest model magazines, in which minimum conditions for bidding on Model Aviation would be detailed, similar to one previously sent to a publisher. It was noted, however, that the letter should also indicate that AMA was not seeking to change its current arrangement, but was receptive

to any proposals.

**Budget for 1969:** Copies were distributed of the 1968 financial statement which indicated a better than break-even year. Also reported on was a budget which was based on a 25,000 member total for the year. It was pointed out, for the record, that the Academy was now operating with an advance budget rather than on the day-to-day basis of the past.

**FAI teams events:** A report was given on finances for FAI team budgeting, noting that present and past operations were within budget but that future team expansion might exceed amounts available. If so, the council would be asked to decide apportionments. The FAI article in the May 1969 AMA News section of *American Aircraft Modeler* was noted for reference.

Discussion followed regarding FAI rules and events which are equivalent to AMA rules and events. It was moved to charge the Contest Boards with the responsibility of determining the feasibility of dropping equivalent AMA events, so as to eliminate duplicating activity. **Approved unanimously.**

Noting that the council had completed all advance agenda items plus considerable extra business, there was unanimous agreement to adjourn the meeting. The meeting had started at 9:15 am, was adjourned at 4:45 pm. **AMA President John Patton** thanked the Executive Council members for their excellent cooperation in completing all business within the originally scheduled time period.

## Observations by the AMA President



tell you about several other things related to the council meeting.

Most of us arrived in Toledo sometime Thursday evening. John Worth (AMA's executive director) and I drove out together from Frederick, Maryland. It gave us about eight hours to talk about Academy business while we were driving.

Our meeting started at 9:15 am on Friday morning. It lasted until 4:45 pm, during which time sixteen different agenda items were explored and most were acted upon—more items than had originally been scheduled. It was a thoroughly business-like achievement.

All districts but two were represented. Eva Biddle from District III and Bob Stalick, District XI, were not able to make it. Vic Cunningham wasn't able to come but he did arrange to have John Pond attend the meeting and vote for District X. I believe this was the highest attendance to any Executive Council meeting, with twelve of the total of fourteen members present. Let me tell you of the council members who were there: **Cliff Piper**, a sharp New England businessman; **Art Schroeder**, a school principal from New Jersey; **Cliff Telford**, an airlines pilot (he flies Electras) from Maryland; **Jim Kirkland**, an outstanding solid-thinking ex-Air Force veteran from Florida; **Gosta Johnson**, a fine Chicago gentleman who is a buyer for a huge printing equipment manufacturer; **Jack Josaitis**, a very well known hobby dealer (World Wide Radio) from Michigan; **Bill Lank**, a drafting supervisor from Dallas (just being from

Texas is enough!); **Stan Chilton**, another fine gentleman who owns and operates a large music business in Kansas; **Earl Witt**, supervisory post engineer at a large military installation in Pennsylvania; **John Pond**, a famous "old-timer" and mechanical engineer from the San Francisco area, and our very able AMA executive director, **John Worth**, from Washington, D. C.

Every one of these men is an outstanding person. They are very sincere in their efforts to make the right decisions for what is best for model aviation. Each of them made a personal financial and family sacrifice in order to attend this council meeting. They are gentlemen who are very respected in their own business endeavors, and they should have the same trust and respect of the membership in their AMA activities. I guess this brings me around to what I wanted to say. In the past I have heard comments from dissatisfied persons who claimed collusion, misrepresentation, shady-dealing, etc., in connection with executive actions. I'm sure this was only because someone did not know the full story of the complex problems in many seemingly simple decisions.

I must say that I believe that our Executive Council is made up of some of the finest, most sincere and dedicated modelers I have ever met. I have seen how they work at considering all the aspects of a problem and then make an honest democratic decision. These are not always unanimous decisions, but since ours is a democratic organization, the majority determines the outcome. I'm sure you should and can trust your elected representatives to act in your best interests.

**John Patton**

Note: The AMA president is a planning engineer with the telephone company in Frederick, Maryland; also president of the Kiwanis Club and secretary of the Frederick County Parks and Recreation Commission. For a further description of the AMA Executive Council and how it operates, the article in the October 1967 issue of *American Modeler* (pages 34-35) is recommended.

## FAI CL Team Program Status Report

The first stage of a two-part program to select U.S. teams for the 1970 Control Line World Championships is now in progress. The time period for the qualifying stage ends on August 10, 1969. Events involved are FAI Speed, FAI Stunt and FAI Team Racing—refer to 1969 AMA rule book for event details.

At least twenty flyers in each of the three events (plus the 1966 and 1968 teams) will be qualified to fly in the Team Finals to be held at St. Louis, Mo., over the 1969 Labor Day weekend. The Team Finals is sponsored by the Yellow Jackets Model Airplane Club. The three top flyers in each category at the Team Finals will make up the U.S. teams.

There are two ways to qualify for the Team Finals. 1. *Via ten designated AMA meets* at which the highest placer in each of the FAI event categories, who is entered in the team selection program, will be automatically qualified for the Team Finals. 2. *Via other AMA meets.* At least ten flyers entered in the team selection program who have recorded the highest performances in each category prior to August 10 will be qualified for the Team Finals. Refer also to event details printed in the AMA News Extra section of the April *American Aircraft Modeler*.

The schedule of designated meets for direct qualification for the Team Finals:

**April 20.** Circle Burners Annual, Sepulveda Basin, Van Nuys, Calif. CD: T. Lowry.

**May 3-4.** High Point Model Air Meet, Spinners Flying Field, High Point, N.C. CD: L. W. Underwood.

**July 5-6.** Confederate Nats, Sebring, Fla. CD: Jerry Wagner, 274 E. 9th St., Hialeah, Fla. 33010.

**July 16-20.** National Model Airplane Championships, Willow Grove Naval Air Station, Pa. Note: Speed on 16th, Stunt and



Team Race on 20th.

July 27. Midwestern CL Championships, Municipal Model Flying Field, Dayton, Ohio. CD: C. China, 5028 Broughton Pl., Dayton, O. 45431.

Aug. 2-3. Jr. Air Races, Cleveland Model Flying Field, Ohio. CD: A. N. Montagino, 3911 Daisy Ave., Cleveland, O. 44109.

Note: Only six meets are listed, but ten are authorized. Those listed were confirmed at press time; others may have been added since this listing—a stamped, self-addressed envelope to AMA HQ will obtain the latest information.

## Nats Notes

**What:** The annual National Model Airplane Championships.

**Where:** Naval Air Station, Willow Grove, Pa., near Philadelphia, for outdoor events. Naval Air Station, Lakehurst, N.J., for indoor events. Nats HQ is at Willow Grove where all in-person entry and registration must be done.

**When:** July 14-20, 1969.

**Entry Forms:** Available by sending stamped, self-addressed envelope to Academy of Model Aeronautics, 1239 Vermont Ave. N. W., Washington, D. C. 20005.

**Advance Entry Deadline:** June 15, 1969 (postmark date of entry form mailing to AMA HQ).

**Late Fees** are increased this year to \$25 for Open Late Basic Entry Fee (no increase for Juniors or Seniors) and to \$3 for Late Event Entry Fees (for all ages), except RC events which remain \$5. Late fees are applicable when entry forms are not postmarked prior to midnight, June 15. The increased late fees, together with a new no-show policy, are intended to encourage advance entry by all who consider Nats entry a possibility even if not a certainty.

**No-show Policy:** The basic entry fee of modelers who enter in advance but who for some reason do not attend will automatically be applied to 1970 AMA membership. (Event fees cannot be credited, as such fees are needed to cover advance processing.)

**Registration vs Entry:** Entry is required first, either in advance by mail or at the Nats, by submitting entry form and entry fees. Registration is the checking in at the Nats, after entry, to receive Nats identification, instructions and latest information. Registration is the final step of entry which acknowledges contestant's presence on site and authorizes flying in the competition.

**Lodging:** Free housing on station to male contestants limited to 550. Priority will be given the first 550 advance entrants and mechanics who request housing—must be claimed on Monday by 2 pm, July 14. Camping on station for males and females permitted (self-contained trailer units only—no tents—no electricity or plumbing hook-ups).

**Meals** (breakfast and supper only) are available at station mess hall to contestants and mechanics, male and female, limited to 1,000. Cost is less than \$1 per day. Priority will be given the first 1,000 advance entrants and mechanics who request meals—priority must be claimed and meals paid for to a U.S. Navy official on Monday, July 14, prior to 2 pm.

**Membership Meeting:** As provided by the bylaws, the Executive Council is calling for the regular meeting of the AMA membership to be held this year during the National Contest at 7 pm Friday, July 18. Consult the bulletin board at Nats HQ for the exact location of the meeting. No agenda had been prepared at press time.

## Once Over

### Frequency Fund Donation



The AMA HQ booth at the Toledo RC Conference. Executive Director John Worth, at left, and HQ clerk Gretchen Cantrell discuss membership processing. HQ Office Manager Lucille Ward types membership cards (almost 200 memberships were sold at the booth!), while District I Vice President Cliff Piper, at right, distributes rule books. Over 4,000 paid admission to attend the Toledo show. The AMA chartered Weak Signals host club donated the AMA booth space plus \$586.50 to the AMA Frequency Fund—proceeds from the weekend raffle.

### Flies Against Record

A recent contest at Grand Junction, Colo., for indoor glider and paper-covered rubber models had both types competing against one another—not on just clocked time, but on clocked time as a percentage of club record in each age class of the sponsoring AMA chartered Grand Junction Modelers. This allowed "mixing apples with oranges." Winner was Jerry Rupe whose rubber model time of 4 minutes, 57 seconds, equalled 121% of the club's Senior record.

### FAI Control Line Events

Six meets of the Valley Circle Burners (Calif.) are to include FAI Speed and FAI Team Racing in addition to other AMA control line events. This provides good opportunity for area flyers to qualify in the team selection program for the 1970 Control Line World Championships. "... it is hoped that some of the T/R team will come from SC, since we furnish all or most of the speed team each time," said the SCAA Newsletter.

### BIRDS Sponsor RC Scale Team Shirts



Joe Bridi (L), representing the U.S. 1969 FAI Scale Team, accepts the first of eight shirts donated by the AMA chartered B.I.R.D. Club of Signal Hill, Calif. Presenting the shirt is Bror Faber, club president. The shirts will be worn by team members Bridi, Maxey Hester, and Claude McCullough during the International RC Scale Contest this summer in Germany.



## Walter H. Billett

1880-1969

Following lengthy hospitalization Walter H. Billett, 88, succumbed on February 24 at Minneapolis, Minn.

Billett was a charter member of the Model Industry Assn. (now Hobby Industry Assn. of America) as well as the Association of Twin Cities Hobby Retailers, Minneapolis-St. Paul. For twenty-three years, until 1955, he ran a hobby shop and was a consistent backer of model meets and model clubs.

In recent years Walt was best known in connection with the fun and fund-raising activities of the Flying 8-Ball Club and the loving cup he created from a tinware hodgepodge of drain pipes, wash tubs, bread pans and assorted odds and ends.

Completion of the AMA History, which was published in mid-1968, absorbed Walt's final energies. The AMA Executive Council on February 28, unaware that Billett had passed on several days before, authorized the AMA Distinguished Service Award to Walt for that history effort.

The 8-Ball Club was a booster activity for AMA, and it served as sponsor of an annual "Shindig" at the National Model Meet, an affair which provided fun and festivities while honoring Navy, Hobby Industry and AMA personalities. Walt was known as the Chief Blooper of the 8-Ball Club and was the only six-star admiral among the club's top brass.

### Honors for Lopshire Book

Word recently received is that Bob Lopshire's book, *Beginners Guide to Building and Flying Model Airplanes*, has received an award from the Library of Congress as an outstanding children's book of 1968. Publisher is Harper & Row. Price: \$4.00, available to AMA members from AMA HQ. Lopshire is chairman of AMA's Junior Committee. The book normally sells for \$4.95.

### AMA Membership Given for Help

The AMA chartered District of Columbia Radio Control Club gives AMA membership (with AAM magazine) to youngsters whose parents have helped the club—who are not DCRC members. This gesture, which is extended to helpers who won't accept any other reward, has been well received.

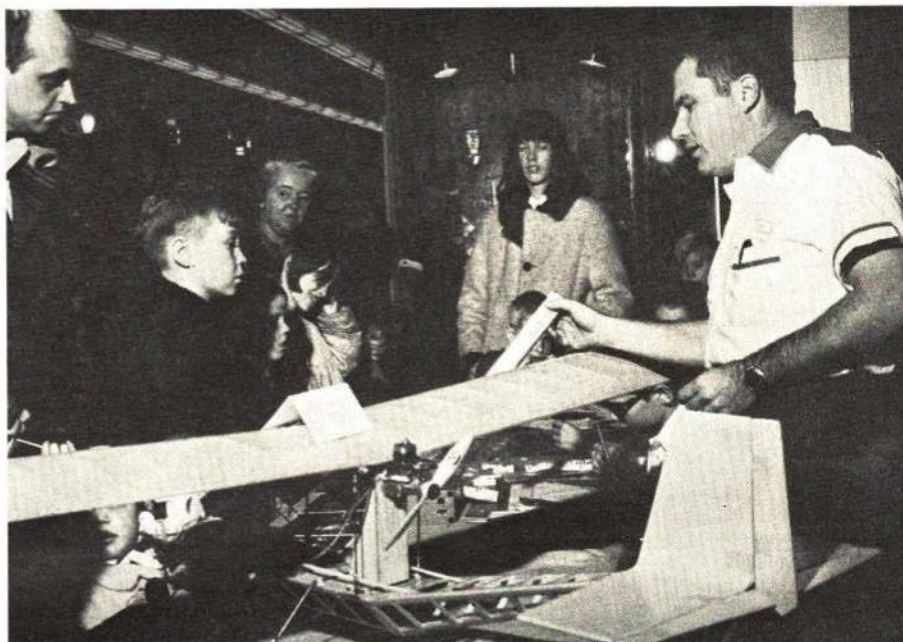
### Origami Contest

An enjoyable time was had at the January meeting of the AMA chartered Utah State Aeromodelers (Salt Lake City) when they had a flying contest for folded paper airplanes. Events were for Door Prize (flying through a door), Spot Landing, Pylon

Continued on page 48



Robert Underwood, chairman of the Greater St. Louis Modeling Association, explains the Cub building/contest program to young visitors to the mall exhibit. The association's second building/contest session in March had 104 preregistrants. Ninety-plus actually participated.



PHOTOS BY BILL CRAME

**SOUTH  
COUNTY  
CENTER**

## St. Louis—Beehive of Modeling Promotion

Modeling in the St. Louis, Mo., area is being promoted by means of a two-pronged effort of the Greater St. Louis Modeling Association. Long-range benefits are expected to be realized from this grass-roots program.

On the one hand the association is conducting instruction, building and contest sessions featuring the AMA Cub beginner's rubber-powered model. On the other it is arranging with shopping centers for manned displays of all types of models.

The Greater St. Louis Modeling Association is comprised of twelve clubs, eight control line, two free flight and two radio control. They are the Alton Area Thunderbolts, Granite City Sky Steelers, Hot Heads, Kirkwood Thermaleers, Lafayette Esquad, McDonnell Douglas Free Flight, Phantom Flyers, St. Louisans, St. Louis Yellow Jackets, Signal Chasers, Spirits of St. Louis, and Throttlemasters.

An unexpected but cherished bonus has been the fellowship and understanding among the various modeling interests which has resulted from this large-scale participation on a man-to-man, modeler-to-modeler basis. Each who has participated now can better understand his modeling brother and his particular fascinations or problems.

The building-flying program takes place over two nights (the initial program in January was at a school on Thursday and Friday evenings, 7-9 pm). Rank beginners were attracted. A parent or adult was required to accompany each child—thought by the association to be an important point as this allowed presentation of modeling to both. A 25c fee was charged to cover the AMA Cub kit and glue. Contest prizes were furnished by a local hobby dealer and the county parks department.

The first evening was used in several ways, commencing with introductory remarks about the association, its representative clubs and the AMA, followed by brief information about the various types of model airplanes—free flight, control line

and radio control—then an eye-opening demonstration flight with an Easy Bee model. Comments were held to a minimum, so it was not long before the assembled group adjourned to waiting newspaper-covered cafeteria tables for building the models. A large number of experienced modelers were on hand, allowing for mostly individual instruction. Moms and dads joined the sons and daughters to build.

In just about an hour everyone had completed his Cub. While the glue was drying the group moved to the gym for demonstrations of adjusting and flying Cubs previously built.

The second night was for contest flying in two age brackets—6 to 9 and 10 to 12. Once again over thirty association club members were on hand to time, record and help with trimming and repairs. Each youngster was given three flights, and the total time for the three flights was recorded. Interestingly enough, in the association's first contest session, a six-year-old helped by a non-modeling mom (filling in for an out-of-town dad) posted the high time of the evening. Imagine the elation filling those two! No doubt dad is still hearing about it.

Prizes were awarded through ten places in each age group—model merchandise (simple rubber model kits, glue, modeling knives, etc.) and ribbons were given.

The association's first exhibit was in the enclosed mall area of the South County Shopping Center, from 9 am to 9 pm on a Saturday. Rather than a simple static display, the association had club members on hand all day to explain the models and answer questions. During the day several modelers spent their time building AMA Cub models which were given away to youngsters. Thousands visited the display—many made a special trip just to view it.

The Greater St. Louis Modeling Association is proud of its accomplishments, and rightly so. Robert Underwood, association chairman, urges all clubs to investigate this kind of activity.

**MODEL PLANE  
EXHIBIT  
SAT FEB 8**

**A (C)**



The heated indoor mall of the South County Center was ideal for winter exhibition. George Finch points out RC details for onlookers.





A brief part of the two-night building/flying program was taken for general descriptions of the various types of model airplanes.



The AMA Cub model is ideal for a beginner's program. It is quick to build and requires no special construction equipment. When ordered in lots of 1,000 (\$160), the wing covering can be printed with a sponsor's message at no additional cost. Request order blank from AMA HQ.



Building session looks hectic, but it really wasn't. Large number of volunteers from the sponsoring Greater St. Louis Modeling Association allowed individual instruction. Group instruction also works well.



Bob Hotze of the Kirkwood Thermaleers helps the youngsters adjust their models. The Cub is designed with enough angular wing-stab difference to assure safe flying—usually requires side thrust for spiral climb.



Right: Linda Sartorius begins building her model. Though mostly boys, several girls participated.

Below: Prizes were plentiful, to 10th place in two groups; nearly a third of the entries were winners. Words from Miss Margaret Kerr, school principal, reflect the results of the association's program: "The teachers say that nothing we have ever done has engendered as much interest. The children are still talking about the fun they had, and the youngsters who did not participate are most envious."



Mishaps do occur, and thus the repair table had its share of activity. Main trouble with repairs is that the youngsters are so eager to fly that they have trouble waiting for the glue to dry adequately.





# nffs SYMPO/2\*

DON'T  
MISS IT!



\*SYMPO/2 is the 2nd NFFS Symposium, to be held this year at Willow Grove NAS on July 15, 1969, 8 p.m. at the Chapel. Over a dozen papers will be presented by top free flight people. Hear the latest in technical, theoretical and practical FREE FLIGHT thinking. Plan to be there this year.

SUPPORT NFFS



## Once Over

Continued from page 45

Race and Endurance. Larry Sward was named high point winner following a fly-off between he and Jim Rhoades for a tie which resulted when modifiers (for bringing guests, entering all events, etc.) were added to the flight scores. Indications are that there will be more fun-type activities at USA meetings.

## ARCS Annual Awards

The annual awards of the Greater Pittsburgh Aero Radio Control Society were presented earlier this year. Phil Catanzaro received the Hillman Trophy for Most Outstanding Service. George Trimmer won the Mehring Award for the Most Improved Flyer, while club Secretary Dick Meyer (of AMA Junior Committee fame) won the bowling ball with the 8 on it.

## Canadian FF World Champ Teams

Teams of Canada for the 1969 Free Flight World Championships, chosen in a three-day, 15-flight finals organized by the Model Aeronautics Assn. of Canada last year: Nordic A-2: W. R. Thompson (2070), J. McGillivray (2050), D. Surry (2035); FAI Power: J. Foley (2496), B. Eggleston (2400), J. Brooks (2225); Wakefield: G. McGlashan (2350), M. Thomas (2286), J. McGillivray (2156). Numbers in parentheses are 15-flight totals in seconds.

## Oklahoma Model Aircraft Assn.

The News Letter of the AMA chartered Tulsa Glue Dobbers Model Airplane Club indicates that the organizational meeting of the Oklahoma Model Aircraft Association was held at Tahlequah last January, hosted by the Tahlequah Chamber of Commerce. About 60 modelers from all parts of the state attended. The association is devoted to promoting all phases of model aviation.

## Penalty for No Name Plate

At a meeting of the AMA chartered Fresno (Calif.) Radio Modelers, Inc., earlier this year the members made an agreement that everyone would be required to wear a name

plate at all meetings, at the flying field and at all club activities. A fine of 25c will be imposed for appearing without a name plate, although this is waived 60 days for new members.

## Working Toward Club Championship

Not only is the AMA chartered D. C. Maxcutters Club seeking candidates from among its membership to make up a team for the National Club Championships, it is already figuring on the possibility of a club elimination contest if too many want to be on the team. According to Max-Fax, the club's paper, it was first thought that the team would have to fly a variety of classifications (gas power, non-gas power and control line), but the AMA rules were re-read to find out that this diversification is not required for club teams—only for individuals.

## WORKS to Require Mufflers

Ron Van Putte, editor of the WORK-SHEET, published by the AMA chartered Western Ohio Radio Kontrol Society, Dayton, says that the society's Board of Directors has stirred up a hornet's nest with a recent decision to require the use of mufflers. Yet, he says, "there is little question that we must begin to use mufflers if we are to retain the south flying field." The club B of D recommends that mufflers be installed before the club's big June contest. Any device which noticeably reduces the sound of an engine is acceptable—not required on an engine of less than .25 cu. in. Van Putte claims that there are very few existing club planes that can't be fitted with a muffler.

## New NFFS Directors

When Chuck Broadhurst and Bill Gieskieng became respectively executive director and editor of the National Free Flight Society, two vacancies were created on the NFFS Board of Directors. Unanimously elected to fill the unexpired terms were Lee Polansky, Pasadena, Calif., Western Director, and Jim Perdue, Tullahoma, Tenn., Director-at-Large.

## RC Fly-for-Fun

The Pensacola (Fla.) Aeromodelers (AMA chartered) held a Fly-for-Fun RC Contest last March according to The Trim Tab. This club paper, one of the most professional looking ones we have seen, is edited by Douglas Foote. The Fly-for-Fun Meet had four events: Carrier, Five-Minute Touch and Go (must start with prop off and restart engine every third touch), Chacane (with plane 25 yards distant, contestant runs to airplane with prop in hand and performs following in the shortest time—take-off, loop, roll, land, return prop to judge), and Balloon Bust.

## Bridge Generation Gap

Communication between Juniors and Seniors is much more likely than between Juniors and Opens, suggests Ralph Prey. This is why he feels Seniors can be more instrumental in getting Juniors going in modeling than Opens, providing the latter make the tools available. These views were expressed in the Satellite, voice of the AMA chartered San Valeers (Calif.) Model Airplane Club. Specific examples of "tools" suggested by Prey are meets with combined Jr.-Sr. events and de-tuned competition model kits of moderate price which allow for use of already-owned engines—as from a discarded plastic model, for instance.

## RC Schneider Trophy Races

Word from Relay Chatter, publication of

the AMA chartered New England Radio Control Modelers, is that John Ross has proposed a new event for the Brimfield hydro meets—a takeoff on the Schneider Trophy races of the thirties. According to the paper, many club members are interested in building these float-equipped racers.

## NFFS "How To Build" Series

In addition to the Free Flight Symposium papers (to be presented at the Nats) the National Free Flight Society has another writing project in the works, a "how to build" series on all phases of free flight activity. Will Nakashima, MD, will be editor of the series. Depending upon the degree of success, the individual papers may eventually be published as a book, according to NFFS Executive Director Chuck Broadhurst.

## Bombs Away!

"No wonder they invented Norden bomb-sights," said the Mile Hi Newsletter, voice of the Denver, Colo., AMA chartered Mile Hi Radio Control Club. This was with regard to the club's first contest of the year which was for simulated bomb dropping. Many of the bombs were dropped as far as 50 yards from the target, but Bill Kessler restored everyone's faith when he achieved a 10-foot average to win the event.

## Coffee Air-Foilers Awards

The 1968 Modeler of the Year awards of the AMA chartered Coffee Air-Foilers Model Airplane Club, Tullahoma, Tenn., were presented at its March 3 meeting to Jim Perdue in the Open division and Brian Webster in the Junior class. Brian was the 1967 Junior winner as well, but he won't be eligible to win for 1969 because of a new ruling to prevent giving the award to the same person two years in a row. Stop-watches were given, a much needed item by most all modelers. The club instituted the awards in 1967 in order to encourage participation in all of the club activities, says Air-Foiler, the club's monthly newsletter.

## Pioneer RC Field Rules

The Pioneer RC Club (AMA chartered) welcomes visitors to attend club meetings and fly at its field in Sunnyvale, Calif., providing the field rules are adhered to. 1. Each RC flyer must be in possession of both a valid AMA and FCC license. 2. Use the pit area appropriate to the frequency of your equipment, as designated by color of flags. 3. Do not take off or hand launch your airplane immediately parallel to pit area. 4. Flying over pit areas or spectators is strictly prohibited. 5. No more than four airplanes are permitted to fly at one time. 6. Show common courtesy and fly safely.

## Linstrum New Symposium Editor

Dave Linstrum, St. Louis, Mo., has taken over the position of Free Flight Symposium Report Editor (for the 1969 Symposium) due to the unavoidable resignation of Dick Mathis. Linstrum will have a full load on his shoulders, what with being FF team program administrator, magazine reporter, and earning a living. Fortunately Mathis had already done much of the groundwork.

The bound volume of papers presented at the 1st Annual Free Flight Symposium which was held during the 1968 Nats is still available from AMA HQ. Over 100 pages, chock-full of FF goodies, the price is \$3.50 to AMA members.

WRITE AMA HQ FOR  
CHARTER CLUB INFORMATION



# AMA News Extra . . . . .

## FIRST AMA SCHOLARSHIP TO BE AWARDED IN 1970

The first AMA scholarship will be awarded in time to be used for 1970 fall enrollment in a college or university. This is in accordance with the proposal of the AMA Scholarship Committee, Cliff Telford, chairman, which was approved at the February Executive Council meeting (see meeting report, page 43). Earlier it had been thought that the award would be made in 1969, but this would not allow sufficient time to announce the program and coordinate the details.

Who is eligible? A high school age AMA member who has (1) flown a model in AMA sanctioned competition during 1969 and (2) participated through his school in the National Merit Qualifying Test which is conducted by the National Merit Scholarship Corporation.

Form required for scholarship consideration. This is available by sending a request with a self-addressed, stamped envelope to AMA HQ, 1239 Vermont Ave., N.W., Washington, D.C. 20005. The form, which the scholarship aspirant must take with him to an AMA sanctioned contest for the Contest Director to certify entry and official flights, must be completed and returned to AMA HQ by the end of Dec. 1969.

Criteria for award. Relative scholastic achievement among eligible modelers (see above) who reach the semifinal level in the National Merit Qualifying Test will be the prime factor the AMA Scholarship Committee will use in determining the winner. (The scholarship will not be awarded by the National Merit Scholarship Corp., but the results of their tests, conducted at schools throughout the country, will be used by the AMA Scholarship Committee.)

Amount of scholarship. The 1970 award, derived from contributions to the AMA Scholarship Fund, will be \$1,000--to be paid upon acceptance and enrollment in an institution of higher learning.

1971 and the future. Scholarships are expected to be awarded annually on a continuing basis, with amounts to be governed by contributions to the AMA Scholarship Fund. Such contributions, federal tax-deductible, are solicited.

## AMA SENDING INDOOR FLYERS TO RUMANIAN SALT MINE!

Yes, the U.S. team for the Indoor FAI World Championship in 1970 will be competing in a draft-free underground salt mine at Slanic Prahova (60 miles north of Bucharest). This site for the World Championship was chosen during the Bureau Meeting of the FAI Committee for International Aero Modeling in Paris last April, when Poland withdrew its previous offer to be host. The salt mine is huge--reported to have a total height of 215 feet. Probable contest date will be in March or April of 1970 when the humidity within the mine is at its lowest, 40-45%. The U.S. team selection program for this World Championship is currently in progress.

## CONTROL LINE SCALE WORLD CHAMPIONSHIP IN 1970?

Word is that France may expand its offer to host a Radio Control Scale World Championship in 1970, by offering to also include a Control Line Scale World Championship. The U.S. has endeavored to be represented by competing teams in all official FAI World Championships. Problem is that a final decision on authorizing the RC Scale World Championship (and also the possible extension to include CL) will not take place until the November Plenary Meeting of the FAI CIAM, a time too late to organize a team selection program by competition. Contingency plans have already been announced to pick the RC Scale team by using the 1969 Nats results. Most likely the 1969 Nats results for CL Scale would be used for selecting a CL Scale World Championship team if, in fact, a Championship is authorized by FAI in November.

## EVEN IF SPECTATOR, BRING YOUNGSTER TO NATS

If you go to the National Contest (Willow Grove Naval Air Station, Pa., July 14-20) as a contestant or spectator, we suggest that your children or youngsters or friends may have a ball by participating in the AMA Cub rubber model building-flying program which will take place every day, Wednesday through Saturday. Anyone not over age 16 may participate if he is not entered in regular competition events. There is no entry fee for the program, and each youngster will be given the AMA Cub kit and taught how to build and fly it. The winners of competitions each day will receive special prizes. In addition to the AMA Cub event, the other 1969 HIAA-AMA-Navy Regional Program events will be held: Hand-Launched Glider,  $\frac{1}{2}$ A Profile Proto Control Line, and  $\frac{1}{2}$ A Solo Race Control Line. Same age and entry requirements as for AMA Cub. See the June issue of American Aircraft Modeler for contest rules, or send a stamped self-addressed envelope to AMA HQ for same.

**By special arrangement with the publisher this page is produced at the very last minute, just before the magazine is printed, to bring you the latest news concerning current Academy of Model Aeronautics events of national significance.**



# DIRECTORY OF AMA OFFICERS

Which officers live in your district? Select correct address when writing officers.

## EXECUTIVE COUNCIL

### President:

John Patton, Route #5, Frederick, Md. 21701

### Secretary-Treasurer:

Earl Witt, Longview Trailer Court, R.D. #3, Chambersburg, Pa.

### Executive Director

John Worth, c/o AMA Hq., 1239 Vermont Ave. N.W., Washington, D.C. 20005

### Vice Presidents

- I: Cliff Piper, Highland Road, Atkinson, N.H.
- II: A. Schroeder, 18 Spencer Rd., Glen Ridge, N.J.
- III: Eva Biddle, 2156 Street Rd., Warrington, Pa.
- IV: C. Telford, 8612 Rayburn Rd., Bethesda, Md.
- V: Jim Kirkland, 344 Edge Ave., Valparaiso, Fla.
- VI: Gosta Johnson, 6810 S. Crandon, Chicago, Ill.
- VII: Jack Josaitis, 23663 Lawrence, Dearborn, Mich. 48128
- VIII: William Lank, 9903 Witham, Dallas, Texas
- IX: Stan Chilton, 446 Ida, Wichita, Kans.
- X: Vic Cunningham, Sr., 4337 Hornbrook St., Baldwin Park, Calif. 91706
- XI: R. D. Stalick, 2807 S. Oak St., Albany, Ore.

## CONTEST COORDINATORS:

- I: W. Leonhardt, P. O. Box 965, Lawrence, Mass. 01841
- II: E. F. Hoffman, 158 Carpenter St., Belleville, N.J.
- III: E. Biddle, 2156 Street Rd., Warrington, Penna. 18976 (East)
- M. Weisenbach, 4568 West 146th St., Cleveland, Ohio 44135 (West)
- IV: D. L. Johnson, 3367 Sudlersville So., Laurel, Md.
- V: T. McLaughlin, 4140 Fern Ct., Pine Glades, Pensacola, Fla. 32503
- VI: Wheland Webb, 15722 Vine Ave., Harvey, Ill. 60449
- VII: Odell Marchant, 2004 N. Hillsboro, Minneapolis, Minn. 55427 (North)
- W. Hartung, 14759 Kilbourne, Detroit, Mich. 48213 (South)
- VIII: M. Frank, 2933 Blankenship, Wichita Falls, Tex. 76308
- IX: R. R. Combs, RR #1 Box 712, Morrison, Colo.
- X: D. C. Farnsworth, 301 Carl Dr., Visalia, Calif. 93277 (North)
- Pete Brandt, 5817 W. Ironwood, Palos Verdes Peninsula, Calif. 90274 (South)
- XI: A. L. Grell, Rt. 1 Box 165, Tangent, Ore. 97389

**CONTEST BOARD COORDINATOR:** Don Lindley, 301 E. Elizabeth Dr., Crown Point, Ind. 46307  
Bold type below indicates Chairman of Contest Board.

## FREE FLIGHT CONTEST BOARD:

- I: Henry Struck, R.F.D. #2, Hamburg, Old Lyme, Conn.
- II: E. Fronczek, 34-14 Broadway, Long Island City, N.Y. 11106
- III: Robert Leishman, 167 Goldenridge Dr., Levittown, Pa.
- IV: J. V. Boyle Jr., 219 Shenandoah Rd., Hampton, Va. 23361
- V: Jerry Wagner, 274 E. 9th St., Hialeah, Fla.
- VI: Chuck Borneman, 1401 W. Taylor, Kokomo, Indiana 46901
- VII: P. W. Klintworth Jr., 894 Brooklawn Rd., Troy, Mich. 48064
- VIII: Robert Combs, c/o American Bank of Commerce, Asst. Vice President, Odessa, Tex. 79760
- IX: Frank Monts, 6519 Marjorie Lane, Wichita, Kans.
- X: John Pond, 2162 43rd Avenue, San Francisco, Calif. 94116
- XI: J. Lenderman, Route 2, Box 460, St. Helens, Ore.

## CONTROL LINE CONTEST BOARD:

- I: D. K. Cook, 148 Belair St., Brockton, Mass. 02401
- II: J. G. Paillet, 30 Emerson Rd., Brookville, Glen Head, N.Y. 11545
- III: Laird Jackson, 525 Meadowbrook, St. Davids, Pa. 19087
- IV: Wm. Pardue, 1407 Gracewood Dr., Greensboro, N.C.
- V: W. D. McGraw, 1325 Carol Dr., Memphis, Tenn.
- VI: Arthur J. Johnson, 1818 Oslo Drive, Rockford, Ill. 61108
- VII: Howard Mottin, 2124 Common Rd., Warren, Mich.
- VIII: Leland Morton, 8614 Triton, Dallas, Texas 75227
- IX: J. R. Mason, 2214 S. Pine Crest, Wichita, Kans.
- X: J. E. Barr, 7418 Collet Ave., Van Nuys, Calif.
- XI: Keith Loutocky, 1419 S. 48th, Tacoma, Wash.

## RADIO CONTROL CONTEST BOARD:

- I: H. A. Thomasian, 369 Brigham St., Northboro, Mass. 01532
- II: R. Noli, 96 Pine Knoll Rd., Endicott, N.Y. 13760
- III: George Kane, 209 Barbara Lane, Warminster, Pa.
- IV: W. C. Northrop Jr., 56 Holly Lane, Newark, Del.
- V: Don Coleman, P.O. Box 436, Citronelle, Ala. 36522
- VI: Bud Atkinson, 734 North 6th St. Terr., Blue Springs, Mo. 64015
- VII: James E. Northmore, 28207 Grand Duke, Farmington, Mich.
- VIII: Wm. A. Knost, 6914 E. Admiral Pl., Tulsa, Okla.
- IX: Loren Tregellas, 3003 S. Everett, Wichita, Kans.
- X: G. E. Nelson, 121 Medinah Pl., Ramon, Calif. 94583
- XI: R. Brooke, 17845 3rd Ave., S.W., Seattle, Wash.



## CD Tells How He Enforces B.O.M. Rule

How to enforce the Builder of the Model Rule (p. 8, 1969 AMA rule book) has been a problem faced by contest directors for years. Most have ignored it on the premise that the rule is unenforceable because violations are too difficult to detect. And, despite many studies and proposals to improve the rule it remains essentially the same.

But one CD with many years of contest officiating experience refuses to ignore the rule. He claims that a good job of enforcement can be done, if a CD will exercise some gumption and take some time to try. The CD is Joe Radle, of New York's Der Luftmeisters model flying club. Here's how he says to do it:

I can't help getting the feeling that if people are having trouble with this basic and simple rule what terrible trouble they must be having with the more complicated event rules like say flying scale, precision aerobatics, etc. Without further delay I will attempt to give my interpretation of how to enforce the Builder of the Model rule:

1. Consider, first, the age and number of years building and the appearance of the model presented by the contestant. Judge should ask these questions or they should be answered on the score sheet by the contestant.

2. The Judge at this point should be able to make an initial determination. Either he feels the modeler probably did or probably did not complete the model according to rule 1.17. In any event he will investigate further by asking a few questions regarding origin of the model and construction techniques apparent by visual examination.

3. At this time he can also make determination as to the acceptability of the model with regards to amount of prefabrication or simple put-together of the model as stated in 1.17. The Judge should, of course, be qualified, and he should be aware of the material available for models of the type flown in this particular event; ie., speed pans, foam wings, etc., that are currently available and do require additional work to complete the model. In addition, these and similar items are usually only portions

*Continued on page 65*

## CONTEST CALENDAR

Official Sanctioned Contests of the Academy of Model Aeronautics

May 30-June 1 — Marysville, Ohio (AA) Central Ohio FF Rally. Site: Lee Farm & Airstrip. L. Willis CD, 1006 E. 12th Ave., Columbus, Ohio 43211. Sponsor: Central Ohio FF Club.

May 31-June 1 — Spokane, Wash. (AA) Spokane RC Championships. Site: Geiger Field, Int. Airport. R. Carson CD, W. 3029 Hoffman, Spokane, Wash. 99205. Sponsor: Barons RC Model Club.

May 31-June 1 — Troy, N.Y. (AAA) Northeastern N.Y. State Invitational Model Airplane Meet for CL & RC. Site: Industrial Park. A. Hurd CD, 22 Racklin Lane, Loudonville, N.Y. 12211. Sponsor: Flying Knights MAC.

May 31-June 1 — Grand Junction, Colo. (AA) 5th Annual Memorial Day FF Meet. Site: 21 Rd. P. Neilson CD, 2104 Gunnison Ave., Grand Junction, Colo. 81501. Sponsor: Grand Junction Modelers.

May 31-June 1 — Clarksdale, Miss. (AAA) Clarksdale Climbers 9th Annual Meet for FF & RC. Site: Fletcher Field. Mrs. G. Pickel CD, 1631 Steen Dr., Clarksdale, Miss. 38614.

May 31-June 1 — Madera, Calif. (AA) Fresno Radio Modelers Open RC Contest. Site: Airport. B. Ehmke CD, 3668 N. Howard, Fresno, Calif. 93726. Sponsor: Fresno Radio Modelers.

June 1 — Cincinnati, Ohio (AA) Cincinnati AMA CL Meet. Site: Lunken Airport. D. Patton CD, 2493 Downing Dr., Cincinnati, Ohio 45208. Sponsor: Extremator Combat Team.

June 1 — Granite City, Ill. FAI FF Qualifying Trials. Site: Lakeside Airport. D. Linstrum CD, 12411 Leigh Lane, Maryland Hts., Mo. 63042. Sponsor: Kirkwood Thermalers.

June 1 — Howell, Mich. (AA) Midwest 1st Annual RC Pylon Jamboree. Site: Midwest RC Society Field. J. Josaitis CD, 23663 Lawrence, Dearborn, Mich. 48128.

June 1 — Chardon, Ohio (AA) CRC 500 All Pylon RC Races. Site: Club Field. F. Vidmar CD, 26500 Zeman Ave., Euclid, Ohio 44132.

June 7-8 — Shreveport, La. (AAA) Louisiana State Model Airplane CL Championships. Site: Hobby Park. W. Lank CD, 9903 Witham, Dallas, Tex. 75220.

June 7-8 — Tullahoma, Tenn. FAI FF Qualifying Trials. Site: Airtoller Flying Field. B. Cleveland CD, 708 Country Club Dr., Tullahoma, Tenn. 37388. Sponsor: Coffee Airtollers Club.

June 7-8 — Columbia, Md. (AA) 2nd Annual DC/RC Glider Meet. Site: DC/RC Field. W. Nesbitt Jr. CD, 1115 Chickasaw Dr., Silver Spring, Md. 20903. Sponsor: DC RC.

June 7-8 — S. El Monte, Calif. (AA) Contest for RC. Site: Whittier Narrows. J. Garabedian CD, 909 N. 3rd St., Montebello, Calif. 90640. Sponsor: San Gabriel Valley RC.

June 7-8 — Lincoln, Nebr. (AA) Lincoln Sky Knights 10th Annual RC Contest. Site: 33rd & Superior. R. Keenan CD, 7131 Colby, Lincoln, Nebr. 68505.

June 7-8 — Nashville, Tenn. (AAA) Mid-South RC Championships. Site: Edwin Warner Park. R. Reuther CD, 216 Vaughns Gap Road, Nashville, Tenn. 37205. Sponsor: Middle Tenn. RC Society.

June 7-8 — Spencerport, N.Y. (AA) 10th Annual N.Y. State RC Championships. Site: Salmon Creek Park. T. Salvemini CD, 6 Valley Lane, Avon, N.Y. 14414.

June 7-8 — South Bend, Ind. (AA) TVRC RC Meet. Site: Club Field. J. Hoffer CD, 1312 Brummitt Lane, South Bend, Ind. 46615. Sponsor: Tri Valley RC Club.

June 8 — W. Suffield, Conn. (AA) Nor-East Air Races '69 for RC. Site: Peterson Farms. B. Williams

*Continued on page 66*



## Getting Started in R/C

Continued from page 42D

the ground; have a couple of buddies hold it up by the wingtips, or put it on a wooden box or table. Use a long insulated tuning tool and try to keep as far from the plane as you can. Of course, you've seen many modelers tune the receiver with the plane on the ground, possibly a few feet from the transmitter. And they fly with no problems at all. Fortunately, equipment makers have provided us with excess receiver sensitivity, excess transmitter power, and our flying ranges are relatively short!

R/C equipment instructions always stress that tuning should be checked at a good distance from the transmitter. You will find that tuning is much sharper then, and you can get it right on the nose. It might take only a few degrees of tuning tool to pass the transmitter signal entirely. Close by the transmitter, you could have as much as a half a turn. And the center of that half turn isn't necessarily the correct tuning spot! If you *must* tune nearby, remove the transmitter antenna, or collapse it fully, to greatly attenuate the transmitter signal.

Loading coils have been used in superhet receiver antennas, and in some cases will provide much better pickup. In other words, you could fly much further from the transmitter. Generally, though, if properly tuned, superhets are amply sensitive for our purposes. Don't bother with a loading coil unless the receiver maker suggests it. Or, unless you want to fly the plane out of sight!

## Balsa Baka Bomb

Continued from page 42

quired, to achieve balance at approximately the point shown on the drawing. Hand-glide your Baka, using a vigorous heave to get the little beast up to flying speed. Add or subtract nose weight, until a smooth descent is obtained. If the model is free from visible warps, yet persists in "falling off on one wing," add a small lump of modeling clay to the opposite wing.

**Catapult:** In lieu of the Betty-bomber which was used to get the real Baka to altitude, we employ a simple catapult, which can be quickly and easily fabricated from a 6" length of 1/4" diameter hardwood dowel, and a loop of 1/8" flat rubber. The catapult launching technique is worthy of some elaboration: First, it is important to recognize that the position by which the model is gripped will alter the launch angle (almost the thrust-line, in effect).

We have obtained entirely different results by gripping the model underneath the wing, rather than by the tail of the fuselage, for example. Also, you may wish to experiment with moving the launching hook slightly forward or aft. While flying under windy conditions, which the Baka doesn't mind, our best results have been achieved by launching across, instead of directly into the wind.

Oh yes, if through some stroke of misfortune, your little Baka happens to bury itself in the ground, you can always tell the onlookers that it was merely a demonstration of a scale landing!



## Z-I-P- Watch it, Mister!

When new Postal Regulations go into effect, your mail will be delayed if it doesn't show your Zip Code. Start now to give your Zip Code as part of your address on ALL your mail.

HELP YOUR POSTOFFICE HELP YOU

# Model Rocketeer

NATIONAL ASSOCIATION OF ROCKETRY

1239 Vermont Avenue NW, Washington, DC 20005



## USAF ACADEMY CONFIRMS NATS SITE

The following letter from Lt. General Thomas S. Moorman, U.S. Air Force Academy superintendent, dated February 7, 1969, is reprinted with pride, for the benefit of NAR members nationwide:

"The USAF Academy will host the Eleventh National Model Rocket Championships. We can provide additional tours and programs to encourage these rocketeers to continue their work in the science and engineering of rockets. We are happy to support your program since activities of this nature tend to insure the continued success of this country's missile and space efforts.

"Captain Harry M. Kepner, in the Department of Astronautics and Computer Science, is the Academy's project officer. He has discussed the program with local representatives of the National Assoc. of Rocketry and the Civil Air Patrol and has begun coordination with Academy officials."

By the way, has your section made every effort to plan launch schedules often, and well enough in advance, to give members the opportunity to earn points needed to qualify for NARAM-11 at the USAF Academy, Colorado Springs, Colo., Aug. 11-15? Though some NAR members may not qualify, sections should encourage everyone to attend to gain knowledge for NARAM-12. Also bear in mind that only through proper support, fine organization, and respect for USAF property coupled with sportsmanship competition, earns a USAFA NARAM site.

## FAA AND MODEL ROCKETRY

With the aerospace sport/hobby of model rocketry becoming increasingly popular to youth, clubs, schools and the serious-minded research person, and noting the fact that more than four million models have been launched without report of a serious accident, NAR members should know the FAA regulations concerned. While it is fine to consider large model projects for reasons of photo work, weather studies, etc., assure yourself in advance that your model will not violate FAA regulations.

PART 101 concerned with balloons and unmanned rockets states: "This part prescribes rules governing the operation in the United States, of (the following):

(3) Any unmanned rocket except— (i) Aerial firework displays; and (ii) Model rockets— (a) Using not more than four ounces of propellant; (b) Using a slow-burning propellant; (c) Made of paper, wood, or breakable plastic, containing no substantial metal parts and weighing not more than 16 ounces, including the propellant; and (d) Operated in a manner that does not create a hazard to persons, property, or other aircraft.

Contact your local FAA representative to review Subpart A & C of Part 101 in more depth. At the same time, section officials could ask the FAA chief locally to be a guest speaker for a future meeting. (FAA

has some films their men present at meetings.)

## ROCKETEER SPOTLIGHTS ALASKA SECTION

(Author's note: This is the first in a series of articles designed to acquaint NAR sections with the history, organization and programs of other established sections. In our initial request for information of persons, places and events which shaped the destiny of sections, we also asked researchers to furnish the specific secrets of success in any given part of their program. This first installment was furnished by a section in advance of our request, so full treatment was not possible. However, MR's who think launching in their area is unique may reconsider after checking this one. Does your section have an interesting story to tell? Send it in with photos of activities or section officials.

Alaska's only NAR section at press time, the Anchorage Assoc. of Model Rocketry (AAMR) meets twice monthly for discussions, business and model rocket construction sessions. Recent elections gave Robert Westmoreland the presidency; Jack Pennington became vice president; and Jim Eshenower, secretary-treasurer.

About 30 members attend the meetings at Wendler Junior High School, through the capable assistance of Jim Harpster, school shop instructor. A recent project of the group was construction of a multiple launcher, with most of the parts donated by a local hobby shop, the "Anchorage House of Hobbies." Mounted on a collapsible saw horse, it has spaces for launching eight models.

One of the first model projects by the group involved three members working on one rocket, for training under supervision. A total of six single-stage models was completed in this manner.

President Westmoreland reports one launch, the coldest, was held in temperature of 5 degrees below zero, but that launch sessions are usually held providing the temperature is "not less than 10 degrees above."

## "COULD HAVE KILLED SOMEONE."

Many letters are received at NAR Hdqrs. describing incidents and accidents or potential situations which endanger both NAR members and innocent bystanders. Here's an item from a rocketeer of Miami, Fla., who reports a flagrant violation of range safety (not by an NAR-type) and ordinary common sense leading to possible loss of life:

"About 100 rocketeers and spectators gather every Sunday at an old airport here for a launching session. Recently, we had real trouble with a young, inexperienced flyer who rarely launches with us. What he did could have killed someone, injured someone seriously or done other damage.

"He made what he called a 'dart,' nothing more than a model rocket engine, fins and straw. The engine was a C-6.5 type on one launch he got off without anyone suspect-

Continued on page 70



# new XL-IC sunday best!



**Sunday flyer or competitor, Micro-Avionics new XL-IC Proportional System is best any day for hour upon hour of smooth, precision control.**

The reasons are many. Twenty-one integrated circuits reduce size, weight and result in ultra reliability. MPS-4 servos are a scant .725 x 1.490 x 1.395" and put out a hefty 3½ pounds of thrust. Small enough for .049 models; power enough for the .60s. Total system weight with optional 225 mah power pack a mere 9½ oz. New internal lock connector system eliminates accidental disconnects; saves space and weight.

Single-stick and dual-stick transmitters are small and comfortable to handle with that precise feel of complete control.

The XL-IC System is the perfect match for medium-sized sport and scale models.

Optional one-six servos with dual linear output deliver 4½ pounds of thrust. Other options include square or flat 500 mah airborne power packs.

*And new Quick Time factory authorized service centers in the East, South and in Canada assure you of fast service when you need it.*

Complete XL-IC System, ready-to-fly, all approved frequencies — including transmitter (built-in charger), receiver, 4 servos, power packs, switch, cables and connectors:

**XL-IC 6D** 6-channel, dual-stick \$429.95

**XL-IC 4D** 4-channel, dual-stick \$399.95

**XL-IC 6S** 6-channel, single-stick \$449.95

Ask your dealer for complete XL-IC specifications or write:

530 South Mountain Avenue, Ontario, California 91762 • Phone (714) 984-2818



© 1969 Micro-Avionics, Inc. P69433





# Nakajima Hayabusa Army Type 1 Fighter

The Japanese 'Oscar' was distinguished by a beautiful camouflage pattern which can be faithfully duplicated.

JOHN N. TOWNSLEY

THE model featured this month (Japanese Hayabusa "Oscar," manufacturer's kit #7) is made by Tamiya-Mokei Model Co. of Japan, imported and distributed by Model Rectifier Corp. of Brooklyn, N. Y. MRC has an excellent line of 1/50th-scale WW II model plane kits, as follows: Shinden-Kai "George," Hayabusa "Oscar," Raiden "Jack," Shoki "Tojo," Hien "Tony," Goshikisen, Saiun "Mert" and lastly the #99 "Dive Bomber."

The above kits are available at your hobby shops or you may contact MRC, 5300 21st Ave., Brooklyn, N. Y. 11204.

The "Oscar" was chosen because it is a very good kit; parts are well made, flash-free, etc., and the aircraft has a very beautiful camouflage pattern. The predominant

ing camouflage colors are silver and medium-pale green with a dash of yellow and matt black. When your model is completed and you stand back to view it critically, you will appreciate the beauty of the model—its grace and unusual camouflage pattern.

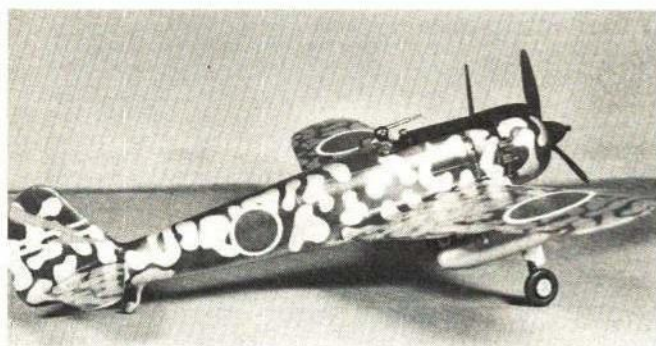
This article will be beamed at the model-builders who may recently have acquired an airbrush, or who plan to in the near future.

There are three airbrushes on the market which I have used with excellent results: Binks-Wren, Badger, and Paasche. The Oscar was sprayed with a Type H Paasche which retails at about \$20. This is a very versatile airbrush and is the only Paasche unit which to my knowledge handles lacquer, enamels and paints. Extra paint jars for storage of paint may be obtained from Floquil or Badger Airbrush Co.

One of the most expensive items in purchasing spray equipment is the compressor, but there is no reason why you cannot form a modeler's group and either contribute equal shares toward purchase, or have someone buy the unit and rent it out to members of the group in much the same way that a floor polisher is rented out. Do it the "Coin-op" way, let the members pay \$1 or so for the use of equipment for a 24-hour period. Plan ahead—have at least two or more models assembled and ready to spray so that the rental will pay off in usage.

Materials used for the Oscar are as follows: One Tamiya-MRC Oscar kit, one bottle each of the following: Pactra Rainbow Lacquers—tile green, RL #60, silver finish, matt black (ML 10) and Pactra lacquer thinner. Floquil primer, one sheet each of

*Continued on page 58*



Unless you are modeling a specific aircraft, a random camouflage pattern is correct. Coloring is silver blobs with dark green.



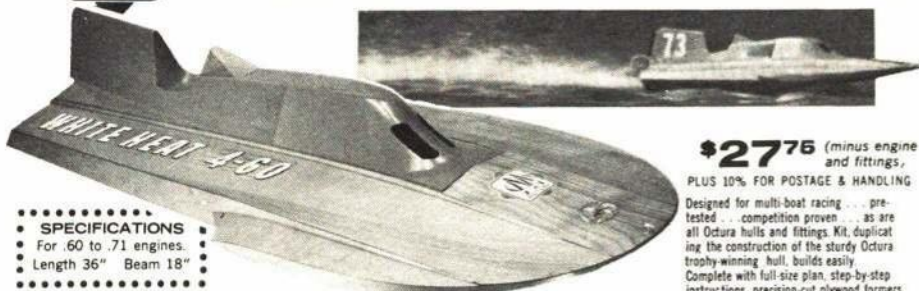
With plane assembled, fill any gaps, spray with primer, then silver and clear. Do all detailing and masking before camouflaging.





# WHITE HEAT 4-60

4 POINT HYDROPLANE KIT FOR RADIO CONTROLLED RACING



**\$2775** (minus engine and fittings, PLUS 10% FOR POSTAGE & HANDLING)

Designed for multi-boating... pre-tested... competition proven... as are all Octura hulls and fittings. Kit duplicating the construction of the sturdy Octura trophy-winning hull, builds easily. Complete with full-size plan, step-by-step instructions, precision-cut plywood formers and planking PLUS fiberglass front cowling and distinctive decals. Motor mount, universal, Kool Klamp, steering strut, shaft and propeller, fin, fiberglass rear cowling, etc. available.

**SPECIFICATIONS**  
For 60 to 71 engines.  
Length 36" Beam 18"

If dealer cannot supply you, send stamped self-addressed envelope for literature and prices.

**OCTURA MODELS** 8148 MILWAUKEE AVE.  
NILES, ILL. 60648

## Radio Control World

Continued from page 35

gory): **WW I or Prior Scale**, Walt Moucha (Jenny); **Post WW I Scale**, Ron Jones (Beech Staggerwing Bipe); **Pattern Plane**, Art Schroeder (Eyeball stunter); **Sport design**, Nick Samardge (Phatal delta); **Pylon**, Joe Holmes (Mustang); **Boats**, F. S. Godby, ("Challenger" schooner). **Best of Show**, F. S. Godby ("Fair American" brig); **Testors Best Finish Award**, Len Sabato (scale Chipmunk). In what was about 90% a model plane show, it might seem unusual that a boat took Best of Show honors; Godby had three R/C sailing craft of really fabulous workmanship and detail—the judges had a hard time deciding which one should get the prizes. Congrats to the WRAMS for pulling off a real dinger on their first try—and we share their amazement at the tremendous turnout they enjoyed!

**Dedicated R/Cer gone:** After suffering several serious heart attacks in the past few years, Dr. Bob Lien died on Feb. 1. Despite his problems, Bob refused to stop flying, and had been most active. He was, in fact, flying a new Pylon racer when he suffered his fatal attack. His good friend and fellow-modeler Stan John, who sent us the sad news, notes that Bob was not only a fine person, but probably the most dedicated modeler he had ever met. The New Orleans R/C gang will sorely miss their perennial sparkplug!

**Who are you?:** Letter dated Feb. 10, 1969 tells us that the writer built a Wankel model engine from info taken from our article in June '68 issue. A few bugs are still to be ironed out. The engine was made of stainless steel (our correspondent says this was a mistake). He wants more information on this type of engine—but the last page of his letter is missing, and we don't know his address or even his name! If the writer will get in touch with us, perhaps we can help.

**The Chicago Scalemasters:** Clark Macomber (922 Oak St., Winnetka, Ill. 60093), apparently an avid scale modeler (he was a scale judge at the '66 Nats), tells of a new model group in his area, the Chicago Scalemasters. Clark will handle public relations. Dave Platt is president. Club was formed to encourage Scale modeling both locally and nationally. While most scale builders in the Chi area are R/Cers, control-line and free-flight scalers will be welcomed.

Monthly meetings are held and anyone with a scale problem (or interest) is urged to attend.

The Valley R/C Flyers (Los Angeles area), is setting up a Scale Directory, principally for R/Cers on the West Coast. Californians who are interested in scale should

drop a line to Don Butman (6161 Platt Ave., Woodland Hills, Calif. 91364).

From a letter in this club's paper from Dave Platt, we learn that, as of mid-December, the Chicago Scalemasters had some 30 members, was getting 8-10 more a month, and that they hoped to run a Chicago Scalemasters meet, probably in September.

**Latest Duster.** In Prop Wash, paper of the Billings (Mont.) Flying Mustangs, we note that Simon Dreese already has a modification of his Montana Duster (see p. 44, '69 American Aircraft Modeler Annual) ready for Spring. It's called "Duster D," has over 600 sq. in. area, is about 1/4 lb. lighter than standard Dusters with same equipment. It has full symmetrical airfoil, center-hinged ailerons. Does fine slow rolls 50 ft. off the ground. Simon won club Builder-of-the-Year award at recent club dinner.

**Highest R/C field?:** That's the claim of the Pikes Peak R/C Club... no, they don't fly on the top of this 14,210-ft. mountain, but their club field at Colorado Springs is in a valley just to the east of Pikes Peak, at 7200 ft. altitude. They've had the field on Mark Wild Ranch for eight years. Also based upon the ranch is the Black Forest Glider Club, owning some 15 gliders and three tow planes. Wonder if this has led the PPRCC boys into the R/C glider field?

Among the 20 members of the R/C group were two Air Force Cadets, Ron Schreck and Ivan Munninghof (ME-109, May issue—Ed.). Both have been active modelers. Ivan has already graduated and Ron will soon, and both will leave for further training elsewhere. This AMA-chartered club has at least two contests each year—one invitational open fly-in for all hands, and a club meet. These fun-flies seem more popular than formal AMA competition.

The boys find flying at their altitude is no great problem—after you learn that a plane sinks much faster in the glide, and will stall quickly with excess elevator. More engine power is needed, of course. A 36 is needed at the PPRCC field, where a .29 would be used at sea level. Gerald Hayhurst invites all R/Cers who pass by to stop for some flying—many acres of clear land in every direction!

### Competition

**Seventeenth Annual Championships:** Latest in a series of R/C meets will be sponsored on June 28-29 by the Detroit R/C Club, whose field is near 18 Mile and Mound Roads, north of Detroit. Events will be Pattern for Class A, Class B, Class C Novice and Expert, Open Pylon, Formula I and Formula II Pylon, Scale. \$1500 in merchandise prizes, down to 5th place, plus 1st-place trophies. Further info from Sterling Smith (4865 Pelton Rd., Drayton Plains, Mich. 48020).



**NEW  
SINGLE  
STICK  
4 CH.  
Tx—15.00 EXTRA**

## CONTROLAIRE ASSEMBLED M.A.N. SEMI KIT KIT

DESCRIPTION	CONTROLAIRE ASSEMBLED	M.A.N. SEMI-KIT	M.A.N. KIT
6 Ch. Deluxe 4 Ser.	\$330.00	\$270.00	\$220.00
5 Ch. Deluxe 4 Ser.	315.00	255.00	208.00
4 Ch. Deluxe System	300.00	239.98	214.98
4 Ch. Tx w/PowerPak	139.98	114.98	99.98
4 Ch. Tx less P/Pak	110.75	88.50	77.50
Add-A-Ch. Tx (5-6)	—	—	6.98
6 Ch. Decoder + Rx	80.00	64.00	54.00
5 Ch. Decoder + Rx	76.00	61.00	51.50
4 Ch. Decoder + Rx	72.00	58.00	49.00
Add-A-Ch. Decoder	—	—	3.98
Rx Pak Charger	7.98	—	5.98
6 Ch. Flite Pak 4 Ser.	210.00	160.00	141.00
5 Ch. Flite Pak 4 Ser.	205.00	155.00	138.00
4 Ch. Flite Pak Deluxe	199.98	149.98	134.98
Servo—S-3 or S-4	30.00	21.98	19.98
Servo Tester	14.98	—	9.98
S. S. Brake	14.98	—	9.98
Brick—deluxe	165.00	—	115.00

When available.

## GENERAL NOTES

When ordering specify 250 mah or 500 mah Rx batteries. Incidentally, if you would want an extra 250 mah battery pack for your system, you can purchase one for an extra of \$7.00. This is a special. Specify S-3 or S-4 servos (it is O.K. to mix them) and frequency. Flite Paks include nickel cadmium batteries, Rx plus servos.

We sell M.A.N. semi-kits and kits less batteries and chargers on request. For this subtract \$35.00 from retail prices. On assembled Controlaire propo add \$35.00 for 72 mc. Add \$15.00 for 72mc Flite Pak.

The word "Deluxe" means with nickel cadmium batteries and chargers. All 4 & 5 channel Decoders expandable to 6 channel.

## OS R/C EQUIPMENT

2 Ch. Digital Propo w/2 servos and Rx nickel cadmium + Charger (assem.)	139.98
OS 3 Ch. Digital Propo w/3 servos and Tx and Rx nickel cadmium + Charger (assem.)	199.98
1 Ch. Combo. Pixie Tx, Superhet Rx + 1 Ch. servo (assem.)	49.98

## SERVICE EXPERTS

The service experts listed in this advertisement are, for the most part, people who have been working with Digitrio and other kit systems in the various areas mentioned. They have all put together an M.A.N. System from a raw kit and have agreed to stock parts that are compatible with World Engines Systems. They have been given schematics of World Engines Systems and current OS Digital Proportional systems. Many of these service experts service other makes of equipment besides our equipment. Consider these people for repair work or for help in matching up our flight packs or the coming bricks.



**WORLD  
ENGINES**



# WORLD ENGINES • SERVICE EXPERTS



## EXPERT OF THE MONTH

Herman Chairez, of Chairez TV & Hobby Shop, 2978 State Street, San Bernardino, Calif., is our SERVICE EXPERT of the MONTH. Herman has an A A Degree from San Bernardino Valley College and has had 11 years experience as an Instrument Tech., Environmental Tech., and Radio and TV Tech., making him well qualified to handle any of your personal radio problems.

## NORTH EAST

### CONNECTICUT

Ed Grening, Jr.  
Rfd. 3 West Hill Rd.  
Winsted, Conn. 06098

**Hobby Shack**  
Rt. 1 Box 143  
S. Coventry, Conn.  
A truly helpful R/C hobby dealer who flies and knows your needs.

Al's Hobby Shop  
5 Beverly Place  
Norwalk, Conn. 06854  
Phone 203-847-7861

### MARYLAND

J.M. Lawrence, Jr.  
8451 Glendale Rd.  
Greenbelt, Md. 20770  
Repairs & modifications on all makes of Controlaire Equip.

### MASSACHUSETTS

Taylor R/C  
Boyce Rd.  
Southwick, Mass.  
R/C Equip. Sales & Service  
Mon.-Wed. Fri. nites 7-11 PM  
Custom work 413-569-5116

### NEW HAMPSHIRE

Dambros Hobbies Inc.  
58 Lake St.  
Nashua, N.H. 03080  
Low, low prices on R/C equipment plus fast repair service.

### NEW JERSEY

J.A. Daneke  
P.O. Box 14  
Rochelle Park, N.J. 07662  
For same day service ship entire system with fully charged batteries.

### NEW YORK

Andy's Hobby Shop  
36 Main St.  
Elmsford, N.Y. 10523  
Specializing in R/C. Open evenings during the week. Engine and servo parts in stock. Mail order available.

Sage Electronics  
10 Hunter St.  
Hicksville L.I., N.Y. 11801  
We repair all brands of R/C equipment including Digitris.

Flynn's R/C Service  
310 Rock City Rd. Rt. 2  
Olean, N.Y. 14760  
All repairs guaranteed  
New & Used R/C Gear  
Phone for Appointment  
716-372-5616

SP/5 Laurier, C.H. Contant  
30th Trans Co.  
APO N.Y. 09165

### PENNSYLVANIA

Gene's Hobby Shop  
1004 - 7th Avenue  
Beaver Falls, Pa. 15010

Mel's Hobby Shop  
P.O. Box 413  
Upper Darby, Pa. 19084  
Let our shop handle your repairs, for fast expert service. All work guaranteed.

### VERMONT

Tom's Hobby Shop  
Cyr's Trailer Park 3 RFD 1  
Springfield, Vt. 05156  
We have all types of R/C Assm. kits, engines, and most R/C gear. See us for the best in service.

### VIRGINIA

R.E. Barnstead  
1708 A Cedar Hill Rd.  
Charlottesville, Va. 22901  
Controlaire specialists

Radio Electronic Model Shop  
800 National Ave.  
Winchester, Va. 22601  
Parts and services for kits and equipment. Mail or direct.

## SOUTH EAST

### ALABAMA

Mike Deasy  
4002 McVey St., S.W.  
Huntsville, Ala. 35805

### FLORIDA

C & D Hobby Electronics  
Box 869  
Jacksonville Beach, Fla. 32250  
Service for R/C equipment  
Single ch., multi reeds, Proportional systems.

Colonial Photo and Hobby  
636-38 N. Mills  
Orlando, Fla. 32803  
Dan Williams, service expert.  
We service all R/C equipment  
Controlaire headquarters.

E.W. Bryant R/C  
Box 416  
Punta Gorda, Fla. 33950  
We service all types of R/C gear - also build radio kits to your spec's.

D.L. Haas  
1502 Bouquenville Ave.  
Tampa, Fla. 33612  
Sales and Service  
All R/C radios  
Foam - Glass kits

S & S Hobby Supplies  
167 Highland St.  
Valparaiso, Fla. 32580  
Fast-efficient repair of your R/C gear, regardless of make or type.

### GEORGIA

Model Electronics  
P.O. Box 1942  
Albany, Ga. 31701  
Controlaire & OS R/C Equip.  
Repairs & Kit building & sales.  
Phone 912-436-8348

### SOUTH CAROLINA

S & R Hobby Crafts  
1127 Arthur Drive  
Charleston, S.C. 29407  
Phone 795-4280  
Radio control headquarters for the South Carolina Low Country.

Ron Childress  
Rt. 3, Hunts Bridge Rd.  
Greenville, S.C. 29609

W.H. Gladden  
142 Camelot Dr. Camelot Vill.  
Hanahan, S.C. 29405  
Charleston's only Digital Propo repair service at reasonable charges.

### TENNESSEE

Curtis Transistor Service  
1749 Cleoford Ave.  
Memphis, Tenn. 38127  
Controlaire Sales Service

L & H R/C Service Center  
1916 Broad St.  
Nashville, Tenn.  
Work by computer engineers - All work guaranteed. Modern electronic equip.

Aerotronics  
109 Chatham Lane  
Oak Ridge, Tenn. 37830  
R/C equipment - Service-repair-trade R/C problems? Free consultation and advice for beginners or experts.

## MIDWEST

### ARKANSAS

Edward Hale  
611 W. Oak - Box 161  
Rogers, Ark. 72756  
Repair all R/C Components  
Printed Circuit design and Fabrication - Moderate Rates.

### ILLINOIS

Stanton Hobby Shop  
4734 Milwaukee  
Chicago, Ill. 60630

Controlonics  
Karr Mfg. Div.  
Box 92  
Thomasboro, Ill. 61878

### MICHIGAN

Gills Hobby Supply  
2020 Lone Rd.  
Freeland, Mich. 48623  
Radio control specialists  
Sales and expert service.  
Tel. 517-799-2532

J.H. Krauer  
22626 Petersburg  
E. Detroit, Mich. 48021  
Service on all brands of R/C equipment, quickly, efficiently.

Northern Authorized Factory Service  
6470 Washington  
Stevensville, Mich. 49127  
Try us for FAST service by qualified engineers.  
Phone area 616 429-9926

### MINNESOTA

Albert H. Schwartz  
2787 Fernwood  
St. Paul, Minn. 55113  
R/C repair phone 633-2286

### MISSOURI

C.W. Reed  
5408 Woodson Road  
Raytown, Mo. 64133  
Contact Charley for quote on Controlaire and M.A.N. Systems and Supertigre Engines

### NORTH DAKOTA

L.B. Postlewait  
606-F J St.  
Grand Forks AFB  
N.D. 58201  
Buck's "Kwik" repair service. Maxi-service at mini-prices on all brands of R/C equipment.

### OHIO

Country-R/C  
12450 Amity Rd.  
Brookville, O. 45309  
4 mi. so. of Interstate 70  
We repair most R/C equipment  
Gerald L. Peters, prop.

Town & Country Hobbyland  
55 Country Road  
Columbus, O. 43213

Ruhe Hobby Shop  
122 Commercial St.  
Leipsic, O. 45856  
Send your R/C troubles to us.  
Controlaire specialists.

Chick's Hobby Shop  
514 Scott St.  
Springfield, O. 45505  
We repair all brands of transistor units.

Wes's Hobbies  
2108 Summit St.  
Portsmouth, Ohio 45662

### TEXAS

Hailey's R/C Electronics  
3624 Chaffin Drive  
Ft. Worth, Tex. 76118  
Proportional system repair a specialty by experts in the field.

Gene Ashley  
2118 Cedar  
Pearland, Tex. 77581  
World Engines R/C Gear assembled and repaired. Send your equip. to me for fast economical service 15 years experience with R/C.

Wilson's Hobby Shop  
2205 West Beauregard  
San Angelo, Tex. 76901  
Align and repair for all kits. Fast return. Dealers welcome.

## WEST

### ARIZONA

R/C Engineering  
4901 E. Holly  
Phoenix, Ariz. 85008

### CALIFORNIA

E & L Models  
681 Mar Vista Dr.  
Los Osos, Calif. 93401  
You fly them & we'll fix them with the best R/C equipment  
G.E. Lyman Phone 528-1158

Chairez TV & Hobby Shop  
2978 State St.  
San Bernardino, Calif. 92405  
Phone 714 887-2369

We specialize in Controlaire Equipment - Try us for prompt efficient service.

### COLORADO

Ziggi R/C Hobby Shop  
2014 Afton Way  
Colorado Springs, Col. 80909  
We will repair your R/C Equipment - Our business is electronic & model's.

### WYOMING

Bobbies Hobbies  
151 N. Cedar  
Laramie, Wyo. 82070  
We repair all brands of R/C gear.

## FOREIGN

### CANADA

World Engines of Canada  
Percy Grondin  
P.O. Box 336  
Windsor, Ontario

### ENGLAND

World Engines of England  
M.J. Wiltshire  
97 Tudor Avenue  
Watford, Herts

### GERMANY

Heinrich Haferland  
Hanover Herrenhaver  
Morgensteinweg 8A, Germany

### GUATEMALA

Roberto Wagner Schaeffer  
2 Ave. 15-24, Zona 10  
Guatemala City

### JAPAN

Ogawa Model Mfg. Co., Ltd.  
83 Hiranobaba  
Higashiumiyoshi  
Osaka, Japan

### NEW ZEALAND

Allan H. Salmen  
8 Mudie St.  
Lower Hutt, New Zealand  
We repair all brands of R/C equip. Prompt service, all work guaranteed.  
Telephone 61109

### SOUTH AFRICA

Sean McCullagh  
Manie de Villiers Sport Ltd.  
223 A Voortrekker Rd. Parow  
Capetown, South Africa



# WORLD ENGINES INC

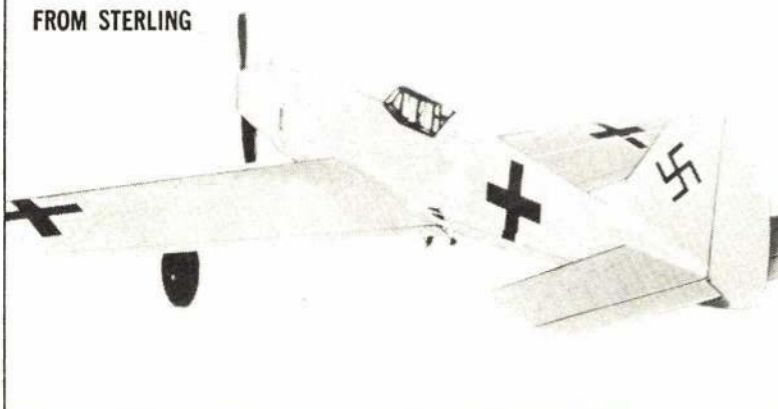
8960 ROSSASH AVE,

CINCINNATI, OHIO 45236



# IT'S NEW!

FROM STERLING



Kit FS-24 Wing span: 55" Length: 43" For engines: .45 and up

## MESSERSCHMITT ME 109

### PROFILE R/C AND IT'S ALMOST READY TO FLY

Pride of the Luftwaffe in World War II! Now Sterling recreates the ME 109 in profile R/C that's almost ready to fly. Get the ME 109 this Friday, fly it on Sunday!

Kit features brilliantly high gloss red plastic covered foam wing panels, ready to join; assembled ready-to-go factory-built fuselage in which the maple motor mounts, maple nut blocks, birch plywood sides, birch wing saddle, etc., have been factory installed. Two sheets of giant authentic decals; plastic canopy, wing tips and hatch; formed wire gear, a Sullivan fuel tank, all required hardware, nylon horns, nylon push rods; etc.

**\$34.95**

# IT'S NEW!

FROM STERLING



Kit D-5 Length: 23 1/4" Beam: 2 3/4"

## THE CUTTY SARK FLAWLESS IN SCALE REALISM A PRICELESS WOOD HEIRLOOM...

Built in Scotland in 1869, the Cutty Sark was the most popular and the world's fastest clipper ship of her day. Our Cutty Sark is an heirloom kit, with plans authenticated by Mr. George Campbell, world's foremost naval authority.

Completely carved hull of clean pattern grade pine with the expensive carved-in-place bulwarks. To insure heirloom permanency, no balsa is used in this kit. All birch masts and yards are beautifully tapered, and the decks have sawed-in planking grooves. Hundreds of cast metal fittings in perfect scale, single and double blocks, brass chain, authentic details, mahogany display base with mounting pedestals. Step-by-step plans show every "secret" of construction rigging, etc.

**\$25.95**

**Sterling**  
MODELS  
BELFIELD AVE. & WISTER ST  
PHILADELPHIA, PA. 19144

**Rousing racing regatta:** Big event of the '69 power boat racing season will be the International Model Power Boating Assoc. Regatta, July 27th-Aug. 3rd, at San Diego. To be held in conjunction with San Diego's 200-year celebration, there will be activities available for the entire family. The host club (San Diego Argonauts) is setting aside parts of two days for Scale steam and Electric demonstrations and competition. There will be plenty of races and record trials for the speedsters too. Already many of the top model boatmen from the U.S. and Hawaii have signed up. Full info may be had from: 1969 IMPBA International Regatta (Box 17098, San Diego, Calif. 92117).

### NEW IN R/C

Having heard that **Bonner Specialties** is out of business, several modelers have written to ask where they can get their Bonner equipment serviced. If you have Bonner digital, send it to Gordon Larson (2602 S. Artesia, Santa Ana, Calif. 92704); Gordon was one of the originators of the Bonner digital line and understands it fully. He has been designated by Bonner Specialties as the official service station for such equipment. Other Bonner equipment service (reed servos, for example) is still handled from the old address (9522 W. Jefferson Blvd., Culver City, Calif. 90230). We understand that some Bonner parts and components may be had from this address also.

An "extractor" type muffler called Vac-Pack is available from **DK Products** (7382 Meadow La., Parma, Ohio 44134). Unit is open front and back; airflow helps pull out exhaust gases and aids cooling. However, this one is entirely different in looks from the usual design. Has stack to clamp onto engine exhaust, but muffler body is short and rectangular. Complete unit weighs 2 oz., \$8.95 PP. Intended for 50-61 engines. Stack adapter may be closely fitted to most engines in this range. Maker claims an increase in power, with acceptable reduction in noise level.

Two new **Adams actuators** at recent Toledo Conference. One the familiar Baby size but has much higher coil resistance — will draw only around 40-50 ma at 2.4-3V. This AR actuator weighs .61 oz., costs \$8.45; low resistance coil is \$4 separately, for conversion of original Baby to low drain. The new Baby Twin (has dual magnets) may be had with either low or high resistance coil, offers much greater control surface moving power for only slight weight and size

increase; this one weighs .75 oz. All these little actuators now have built-in movement limit stops and are distributed through **Ace Radio Control** (Box 301, Higginsville, Mo. 64037).

Though they did a good job of kitting their **Kwik-Fli III**, **Top Flite Models Inc.** (2635 S. Wabash, Chicago 16, Ill.) has been surprised to find that many novices and experts have taken a dim view of this plan-less kit (Top Flite spent a lot of time and effort in the prefab; designed the kit so that plans are completely unnecessary for assembly). According to many requests, concern now offers a complete set of full-sized building plans. There is also a new and enlarged sheet of assembly sketches and instructions. Owners of the Kwik-Fli-III kit may obtain all this material free, by simply clipping the nameplate panel from the lower right hand corner of the original assembly-instruction sheet and mailing (be sure to include your name and address!) to Top Flite. You'll also receive a pair of added dihedral braces, to beef up the center joint of the wing. Remember — don't send any money. Do send name panel from original instruction sheet, plus your name and address.

Expanded line of **Spinaflo** mufflers in a lighter, lower cost design are being marketed by **Model Aircraft Ltd.** (Norwood Pl., Bournemouth, England). There are two main sizes, covering engine capacities from 19 to 71, but a variety of adapters assures that there will be a tight fit on some 41 different sizes and makes of engines. All the engines for which these mufflers are made are manufactured or widely distributed in the U.S. The larger muffler size averages about 2 1/2 oz., the smaller about 2 oz. All are clamped to the cylinder with a threaded rod and pair of vibration-proof locknuts. Prices in England are about \$5.10 for large size \$4.35 for small. Maker expects to have outlet in U.S. by the time you read this; prices over here will be nigher.

A twin-opposed cylinder glow engine built in Europe is being imported by **Kronk Mfg. Co.** (566 W. Julian St., San Jose, Calif. 95110). Presently available only in air-cooled version of 61 displacement, larger and smaller sizes will later be stocked. There also will be water-cooled types. Concern is presently designing an ARF plane especially for the 61 engine. It will have foam wings and F.G. fuselage. The engine runs best with props from 11-8 to 12-6, speed range is 2,000-14,000 rpm. Equipped with R/C throttle. Crankshaft is ball-bearing. Price of \$90 includes a pair of mufflers; with latter in use, no exhaust baffles are needed for good idling.

R/C glider types who visited the Toledo Conference were intrigued by the fuselage of a scale "Cirrus" model, shown to many by **Mr. Fred Militky** (Chief Engineer of the German **Johannes Graupner** concern). This model is a close scale copy of the present world-champion full-sized glider. Model will span about

120", and is some 50" long. Vacuum-formed fuselage comes in three sections in the kit. It is of tough ABS plastic that will not change length significantly with temperature changes. Designed for rudder, elevator and ailerons. Wings normal built-up construction, has a "flying stab." Provisions for mounting small engine in pod over wing. While this sleek craft can be flown on rudder-only, undoubtedly you'll need REA for best results. Kit price is not known yet, but kit will be distributed in the U.S., possibly through **Nelson Model Products Inc.** (Box 2027, Dublin, Calif. 94566). Should be available in July.

Several new plans and kits offered by **Bob Holman** (Box 741, San Bernardino, Calif. 92402). There is a **Bucker Jungmeister** 2-sheet plan from the **Complet-A-Pac** English line; 59 1/4" span, for 49-61 engines. From same line comes a 1 1/2" scale **P-47D**; 61 1/4" span plane in kit form costs \$43.95, or plans only for \$4.50. From Bob's own line is a two-sheet plan for the English "Currie Wot" single-place sport biplane, with about 44 1/2" span. Plans show full-house controls. **ST .23** engine is suggested for scale performance; plans, \$3. Bob also has added a semi-scale 49" **P51-D** kit to his line, for \$29.95 PP. The present **Complet-A-Pac** kit for the **Tiger Moth** is for a land plane (costs \$39.95 PP) but a separate kit for floats soon will be offered.

Giant scale **Piper J3 Cub** offered in kit form by **Span Aero Products** (Box 63, S. Norwalk, Conn.). This 8' span plane is intended for full-house controls, designed for use with 60-80 engines, said to feature easy construction. Kit includes formed ABS plastic cowl, seats and dash. Plane is scaled 2 3/8" to 1", should be ideal for glider towing. Plans are on two 30 x 60" sheets.

Latest R/C car from **The Testor Corp.** (Rockford, Ill. 61101) is a **Fastback Mustang 2-2, 15"** long. Comes with propo steering and provision for start-stop. Car has steel chassis, nylon gears, two electric motors and heavy-duty rechargeable batteries. Complete with radio equipment and charger, costs \$99.95. Similar radio equipment used in Testor ready-to-fly plane; this has 44" span wing, .049 engine with patented starter; pulse propo rudder control. Complete plane outfit is same price. The radio gear includes eight-transistor relayless pulse transmitter with center-loaded antenna, 12V battery and 250 mw input. Panel lever gives steering and there is a trim control, also provision for start-stop button for car use. Superhet receiver plus dual-magnet Adams-type actuator and nickel-cad pack weigh 6 oz.; system comes all wired and with switch and charging connector on small separate panel; radio system with charger, \$79.95. The McCoy line of R/C engines now includes four sizes — .19 to .40 cu. in. capacity. All are throttle-equipped, of course, prices range from \$14.95 to 17.95.



# IT'S NEW!

FROM STERLING



Kit FS-22 Wing span: 40 3/8" Length: 30 1/2" For engines: .19 to .29

## S.E. 5a REMARKABLE SCALE REALISM!

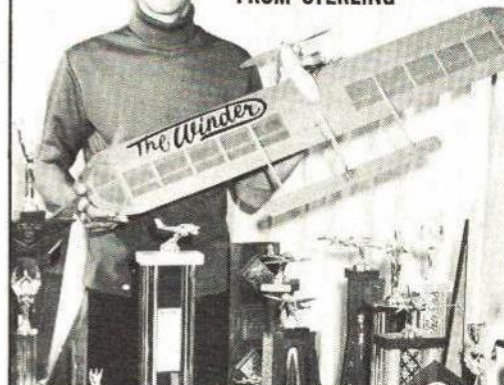
Britain's most devastating World War I fighting plane. A superb 1 1/2" scale super detail model... and its size is perfect for the new proportional radio gear!

Finest quality balsa, plywood, maple, etc., diecut and accurately shaped. Formed wire landing gear and center struts; detailed scale plastic machine guns, lower hinged cowl, etc.; giant authentic decals, metal radiator-shutters, nylon tube pushrods. All hardware, screws and nuts, nylon control horns, nylon bell cranks, etc. Complete plans, full-size layouts and step-by-step instructions. Can also be built and flown control line.

**\$21.95**

# IT'S NEW!

FROM STERLING



Kit S-33, .35 Eng., Span 42 1/2"

## THE WINDER COMBAT CONTROL LINE

The hottest one! Winner in contest after contest including First Place at the Nationals! The experts say the Winder is "the best combat, flying model ever!" Complete prefabrication of diecut and shaped parts assures fast and accurate assembly. Features triple tail booms; high aspect ratio wing; special semi-diamond thin airfoil. Structural design resists wing flexing.

**\$4.95**

STERLING MODELS • BELFIELD AVE. and WISTER ST. • PHILA., PA. 19144

If no dealer available, direct orders accepted—with 10% additional charge for handling and shipping. (60c minimum in U.S., \$1.25 minimum outside U.S.)

☐ Catalog of entire line of airplane control line model kits, R/C scale and Trainer kits, boat model kits, accessories; etc. 10c enclosed.

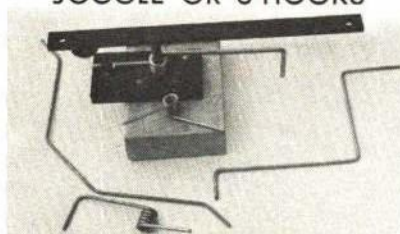
☐ "Secrets of Model Airplane Building," including design, construction, covering, finishing, flying, adjusting, control systems, etc. 25c enclosed.

☐ "Secrets of Control Line and Carrier Flying," including preflight, soloing, stunting, Carrier rules and regulations, Carrier flying hints and control line installation instructions. 25c enclosed.

Name \_\_\_\_\_  
Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

## BENT OUT OF SHAPE?

NEW IMPROVED UNIT MAKES  
JOGGLE OR S-HOOKS



MIDLAND PACIFIC, INC., P. O. Box 1861, Billings, Montana 59103 (406) 252-6895

Don't Be! Midland Pacific's Coil and Wire Bender assures absolute accurate forming of piano wire up to 3/8" diameter. A positive lock holds the wire firmly in place until released. Coil nose gears can be formed instantly with this rugged unit. Price is \$12.95 postage included. The ultimate in coil and wire benders!

## Plenty of WIN-POWER!

from a **Tornado PROPELLER**

More forward travel per rev when you fly the finest! Try TORNADO... propeller of consistent high quality. Feel its ultra smooth finish... examine the airfoil section perfectly engineered with true pitch.

Delivers more POWER from your ENGINE.

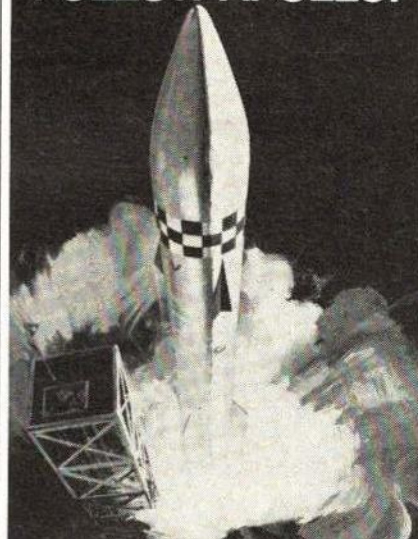


**3-BLADE NYLON**  
Metallic Aluminum Color

2 Blade Pusher		2 Blade Tractor	
SIZES	EACH	SIZES	EACH
5 1/2-3 5 1/2-4		5-3 5-4 5 1/2-3 Each	
6-3 6-4	25¢	5 1/2-4 6-3 6-4	25¢
8-6	85¢	7-4 7-6 7-8	40¢
9-6 10-6	\$1	8-4 8-6 8-8	60¢
3 Blade Tractor		below in white, too	
5-3 5-4	50¢	9-4 9-6 9-7 9-8	
6-3 6-4		10-4 10-6	85¢
3 Blade Pusher		11-4 11-6 11-8	\$1
6-3	50¢	RC 12-4	
		12-5 12-6	\$1.50

**GRISH BROS.**  
ST. JOHN 1, IND.

## FOLLOW APOLLO!



Like NASA's moon rockets.

## VASHON ROCKETS are LIQUID FUELED!

Altitudes over 1,000 feet • Polished aluminum body • Electrically fired • Parachute recovery • Safe — not explosive or flammable • Available anywhere in the U.S.A.

INFO-PACKED CATALOG Complete Vashon liquid rocket line and accessories — See your hobby dealer or send 25¢ to

**VASHON INDUSTRIES, INC.**  
Box 309-AM, Vashon, Washington 98070





TRY R/C MODEL BOAT RACING

## for REAL KNITTY-GRITTY COMPETITION

### There Are Plenty Of Thrills and No Wipe-Out Worries

If you've never raced an SK boat or other R/C boat model you're in for pleasant surprises. From the time you pull the cord and tool out of the starting line . . . to the fight for position at the first turn buoy . . . it's a "you're in it" experience till the finish. You'll find R/C boat racing a thrill-a-minute hobby with sanctioned meets in almost every area.

But there's more here than speed, performance and competition . . . there are advantages in R/C boat racing that you'll find in few other related hobbies. **YOU CAN RACE ALMOST ANYWHERE** . . . a pond, a lake, a stream even a river. No special fields, no long hours of driving to find the few spots in your area.

You've got a real race, boat against boat, with as many competitors as there are open frequencies. Sure there are collisions, spin-outs and flips, even lost control . . . but your built-to-last models are made to absorb the worst jolts and bounce back in a flash . . . so there are really **NO WIPE-OUTS**.

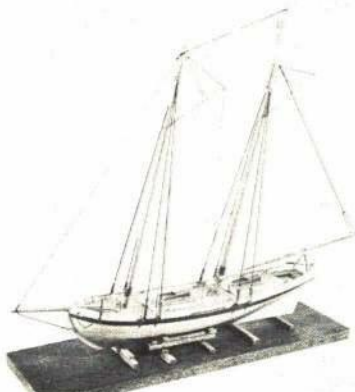
Yes there's something for everyone in R/C boat racing . . . and something for every R/C boat racer in the Dumas line of quality SK boats.

*dumas*  
boats

A DIVISION OF DUMAS PRODUCTS, INC.

DUMAS PRODUCTS, INC., P.O. BOX 6093, TUCSON, ARIZONA 85716

**DUMAS SK BOATS** IN 18", 27", 32" and 36" lengths. Priced from \$7.50 to \$21.95. Also see the new **DUMAS DRAG 'N FLY HYDROPLANES** for 40 & 60 engines.



### Virginia Pilot Boat KATY of Norfolk, c. 1800

A "Baltimore" type, a fine-lined schooner of graceful proportions and rig.

The simple rig and large (1/4" = 1 ft.) scale gives a 14" hull and makes this an excellent starter-model on which to "teeth," to learn the ropes of wood working, principles of rigging and ship nomenclature.

Kit contains machine-carved pine hull, wood materials, spars, cordage, white-metal parts, plan and instructions — \$13.75 postpaid.

For beginners we recommend Geo. Campbell's JACKSTAY, 60 pages, 8 1/2" x 11", half sketch and half text. Of value to starters and experienced hands — \$2.65 postpaid.

Send 50¢ for our 1969 catalog showing many kits, fittings, books, tools, plans, etc.

FOLIO W

MODEL SHIPWAYS

BOGOTA, N. J. 07603

Three planes now in the line by Harco (290 Thompson Ave., Oceanside, N.Y. 11572). The 67" span Javelin for 45-60 engines is the oldest, is rated as an ABC trainer, costs \$44.95. Fury is a stunter for the expert, for 60 engines only, 63" span, same kit price. Coming soon is full-scale model of the Waco Meteor; kit has large formed canopy, plane will have simulated wing-tip tanks, trike LG, and is fully stunnable. All kits have countless pre-cut parts for fuselage, foam wing cores, all balsa sheeting and hardware.

The 2" to 1" line of WW I scale plane plans from Aero Tee Model Eng. Co. (76 Condit St., Harrison, N.Y. 10528) now includes Spad XIII, Fokker DR I, Albatros DV-A, Eindecker E-III. Plans are \$7.95 for all but the latter (which is \$6.95). Rib and former kits are available for all models, at prices ranging from \$15.95 to \$26.95; these kits do not include the plans. The planes have been seen in action at many scale events, flown by Lou Peretti.

## Scale Techniques

Continued from page 53

#400 and #600 wet or dry. Jeweler's file. Another very useful item is a Lazy Susan; these can be obtained in many supermarkets or the five-and-ten stores, sometimes under a dollar in cost. They are excellent for using to spray the model — when the model is placed on the revolving Lazy Susan, you will not need to handle the model while spraying. In addition, Duratite tile putty, auto spot putty, small bottle Wilhold cement, Testors liquid cement, a fresh roll of masking tape 3/4" or wider and curved cuticle scissors.

Check kit for any missing or broken parts repairing as needed. Sometimes there is a long wait for parts to be sent from manufacturers. Have not yet had to send to MRC for any parts, but from past experience know that the waiting period is true of some manufacturers — so I always advise checking of parts so that you will not have the model partly built only to discover some part is missing. I will buy a kit if the box tape has been broken, but not if the sealed bags containing parts have been tampered with. A dealer has no way of knowing whether you lost the part yourself, or loss occurred in the store.

Assemble the kit as per directions. Make flaps and ailerons movable if you wish; the canopy as well can be made to slide back and forth. I made all my parts static, however, as they are not handled anyway.

After the parts are assembled, use spot putty very sparingly where seams may have opened up or are not a tight fit. Always use a very small amount of putty as you may destroy some of the surface detail — rivets, panel lines, etc. If you have to sand around the rivets, roll your sandpaper into a tight tapered roll. Use the tip to pick the putty out without sanding off the rivets.

Apply primer coats until model has a smooth finish, sanding between coats. After final sanding of primer coat, then on to the business of spray-painting the model. (See Photo). Silver is tricky to handle, but is well worth the trouble, compared to using the paste products such as "Rub-N-Buff" or "RUB-ON." Of course, if you have no access to spray equipment, or do not know anyone who will spray the model for you, then you will have to use either of these or some similar product. Of these two, RUB-ON gives the best finish.

In mixing the Pactra silver, mix with Pactra thinner, testing on scrap plastic until you have the proper mixture. It should not be so thin it runs nor too thick either; the correct mix is about the consistency of coffee cream. There is one thing you must remember about silver or any metallic finish: the metallic powder, being heavier, will settle to the bottom of the spray container. Consequently, you will have to stir it well at least once every five minutes when spraying. Wooden coffee stirrers are excellent for this purpose.

Spray entire plane with one coat of silver,



**WE'LL GIVE YOU \$1<sup>00</sup> TOWARD THE PURCHASE OF YOUR FIRST YARD OF**

# **MonoKOTE™**

Pat. No. 3,388,651

**THE COVERING WITH THE BUILT-IN FINISH**

If you've never tried MonoKote, or if you or a friend tried "original" MonoKote and didn't like it, we're willing to pay you to try our new, improved Super MonoKote. Whether you're an expert, or could never get a professional-looking finish, you'll find new Super MonoKote extremely quick and easy to handle and apply, even on the most difficult compound curves. New Super MonoKote bonds firmly with just the heat of an iron. You'll find it's strong, light weight, yet puncture resistant. Most important, however, with our wide variety of colors in Opaque, Transparent and Metallic finishes, Super MonoKote guarantees even the beginner a professional-looking finish with a **lot less work** and in **far less time**. • For all these reasons, MonoKote has become the accepted standard of modellers who've tried it. We're so certain that once **you've** tried it, we know you'll never go back to the old fashioned silk span-sanding-doping method . . . that's why we're willing to pay you \$1.00 to try Super MonoKote.\*

**MONOKOTE IS AVAILABLE AT ALL LEADING HOBBY SHOPS**

**NEW!**

## **METALLIC SUPER MONOKOTE**

2 NEW HIGH-GLOSS METALLIC COLORS

Only \$1.75 per running foot, 26" wide.

METALLIC BLUE  
METALLIC GREEN

## **TRANSPARENT SUPER MONOKOTE**

3 NEVER-BEFORE-IN-MODELING-HISTORY FINISHES

Only \$1.50 per running foot, 26" wide.

SOLAR RED  
SUNRISE YELLOW  
SUNSET ORANGE

## **OPAQUE SUPER MONOKOTE**

8 ULTRA HIGH-GLOSS FINISHES

Only \$1.35 per running foot, 26" wide.

MISSILE RED  
INTERNATIONAL ORANGE  
PIPER YELLOW  
JET WHITE  
MUSTANG ALUMINUM  
SKY BLUE  
INSIGNIA BLUE  
MIDNIGHT BLACK

**NEW**

## **REGULAR MONOKOTE**

9 ULTRA HIGH-GLOSS FINISHES

Only \$1.25 per running foot, 26" wide.

MISSILE RED  
INTERNATIONAL ORANGE  
PIPER YELLOW  
JET WHITE  
MUSTANG ALUMINUM  
INSIGNIA BLUE  
FOREST GREEN  
MIDNIGHT BLACK  
AZTEC GOLD

**NEW!**

**Regular MonoKote Trim Sheets** 5"x36" in All Colors 89¢ each

**\$100**

TOP FLITE MODELS 2635 SO. WABASH AVE, CHICAGO, ILLINOIS 60616

**\$100**



\*Please send me \$1. I have purchased a yard or more of MonoKote from my hobby dealer and I am enclosing a copy of the sales slip. (This offer is limited to one \$1 rebate per modeller, and coupon and sales slip must be mailed prior to midnight, July 10th, 1969.)

Offer good only in U.S.A.

Name \_\_\_\_\_

(please print clearly)

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

Zip \_\_\_\_\_

**\$100**

**\$100**



Quality American Craftsmanship By

# ★ FOX ★



## FOX 29x R/C

Bore ..... .738  
Stroke ..... .700  
Disp. .... .299  
Wt. .... 8 oz.

**\$19.95**

A beautifully running, relatively high speed 29. One piece crankcase design with slip liner. Lapped meehanite piston. Triple jet full suction carburetion. Switch type exhaust valve. Needle bearing main. Reliable idle. Ideal for small multi's and Goodyear racer types.



## FOX FUELS

COME IN THREE FORMULAS

**Superfuel**—A mild fuel featuring 5% Nitro and 28% Castor—High Oil Content. Favors hot weather and bushing motors.

Pt. \$1.05 Qt. \$1.79 Gal. \$5.95



**Duke's Fuel**—Now has 21% Oil and 10% Nitro. Good all around formula for needle bearing or ball bearing motors. Used a lot in R. C. Gallon \$6.50



**Missle Mist**—25% Nitro and 27% Oil gives real snappy performance. Nitro is buffered to reduce preignition.

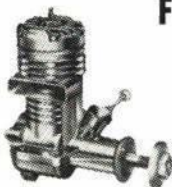
Pt. \$1.20 Qt. \$2.10 Gal. \$7.50

## FOX GLO-PLUGS



Here are the world's best dual-range Glo-Plugs. The rhodium alloy element starts quicker, idles better, runs faster and lasts longer than conventional platinum elements. The synthetic insulators do not crack with wrench torque or cause heat dams to make engine preignite.

Standard Long or Short .....\$49  
Heavy-Duty Long or Short .....\$75  
R/C Long or Short .....\$98



## FOX 35 STUNT

Bore ..... .800  
Stroke ..... .700  
Disp. .... .352  
Wt. .... 6 1/4 oz.

**\$16.95**

For immediate shipment. The Fox 35 Stunt has won more contests throughout the world than all competitors combined. No other motor is so completely dependable, so steady in power output, so understanding of "pilot error." The perfect motor for either the beginner, or the old pro.



MFG. CO.  
5305 TOWSON AVENUE  
FORT SMITH, ARK. 72901

allow to dry thoroughly. Then sand lightly any spots that are rough. Again, watch the rivets and detail. Stir the silver thoroughly before you start to spray the second coat. At the end of the second spraying, your plane should begin to look like aluminum; however, if you think another coat would improve the plane by all means do spray again, being sure to stir the silver mixture thoroughly before you spray.

Allow the model to dry completely before starting the camouflage pattern. In the meantime, clean your gun thoroughly with thinner. Then mix Pactra clear with Pactra thinner until the mixture is as thin as water. Test it on a piece of scrap plastic; be sure the mix is not so thin that it will run. Cut the pressure down to about 20 lbs. and place your plane on Lazy Susan or suitable holding device. Coat hanger will make a good holder. Place with top side of plane down. Spray all undersurfaces with the

clear mixture. As soon as you can handle without smudging, put it right side up and spray upper surfaces with clear. Repeat this process about four times. You will be amazed at the depth that has been achieved on the aluminum-sprayed surface by the addition of the clear coats. The reflection seen in the photo is due to the depth created by spraying with clear.

While the clear spray is drying, you can prepare your camouflage pattern thusly: On a piece of Formica or plastic, unroll about four lengths of masking tape. What you will ultimately require is about six pieces which are cut to 12" or so, give or take a silly little millimeter. If more lengths are needed, use the same process to cut more. Draw assorted shapes on plastic with a soft lead pencil (check photos for approximate size, shape and placement as to where tape will be applied).

After you have penciled in the various

ORDER . . . BUILD . . . FLY . . . NOW!

## Sudden Service Plans

Full-Size Plans—Shipped First Class Mail

Within 48 Hours—No Extra Charge

**#0791, Pusher Galore**—Bill Hanan's all-sheet, rubber-powered pusher for the Tenderfoot is a wild flyer. Patterned after the old-time A-frame models, this 20" long job has the look of a Supersonic Transport. **Price—\$5.50**

**#0792, Rivets**—a speedy, responsive and grooving performer of an R/C model. Owen Kampen designed it after the full-size "Rivets" racer and for an .020 engine. Use an Adams Baby Actuator for rudder-only control. **Price—\$1.50**

**#0793, Atom**—Howard Mottin's Advanced Training Operational Model for the novice in Control-Line flying. Build it quick from sheet balsa. Easy flyer uses a .15 or .19; convert it later to larger sizes. **Price—\$1.75**

**#0794, Skimmer Airboat**—build this sled-type of watercraft, add a .10 size engine and R/C it with rudder and throttle. You're off to the pond with Paul Hook's Skimmer. Give 'round-the-bouy racing a try—it's fun. **Price—\$1.75**

**#0691, Jr. Sky Squire**—R/C sport-trainer by Jess Krieser uses .09 to .19 engines and systems from galloping ghost to multi reeds and digital proportional. Wing area is 416 sq. in.; span—48" and the weight—about 3 lbs. **Price—\$2.00**

**#0692, 1/2A Sky Squire**—small scale version of the famous Sky Squire. Fly it 1 ch. rudder-only or with rudder, elevator and motor via a galloping ghost. Strictly for fun! Span is only 39"; airborne weight will be 22-28 oz. **Price—\$1.75**

**#0693, Mustang**—Al Rabe's great, semi-scale C/L stunt machine flies pattern with ease; it's competitive! Join the stunt scene with a realistic model. The 48-50 oz. ship takes an S.T. .40. Wing span is over 57". **Price—\$1.75**

**#0592, Messerschmitt Bf. 109E**—an R/C, semi-scale design by Munninghoff with the long, lean and mean look of an efficient fighter. The flying characteristics are great; the maneuvers easy. Plans on two sheets. **Price—\$3.00**

Plans—from AMERICAN AIRCRAFT MODELER construction articles—are well-detailed, high-quality, blue-line prints.

ORDER BY PLAN NUMBER AND NAME; SEND REMITTANCE TO:

American Aircraft Modeler

**SUDDEN SERVICE PLANS**

733 15th St., N.W., Washington, D.C. 20005

These prices apply only to U.S. (includes APO's and FPO's) and Canadian orders. Add 25% for shipment to foreign countries.





# CARL GOLDBERG

## New! RANGER 42

The Versatile Almost-Ready-To-Fly Fun Model

For Single or Multi-Channel  
Radio Control; Also Free-Flight

Span 42"  
Length 31"  
Area 240 sq. in.  
Weight 26-36 oz.

Can be flown 6 ways:

1. Single Channel Radio, Rudder Only
2. Single Channel Radio, Galloping Ghost
3. Two Channels, Rudder and Elevator
4. Three Channels; Rudder, Elevator, Engine Throttle
5. Four Channels; Rudder, Elevator, Engine Throttle, and Ailerons
6. Free Flight

Full explanation of each method given on plan.

### FEATURES:

- One-piece molded Wing, high-lift
- One-piece molded Stabilizer
- One-piece molded Vertical Fin
- Molded Fuselage, completely assembled with firewall, nose gear, plywood floor, side rails, and main landing gear block already installed
- Complete fittings — nylon links, horns and keepers; nylon hinge material, screws, blind nuts, washers, eyelets, retaining springs, etc.
- Complete plans, with step-by-step illustrations
- Instructions on Operating Radio Control Models

For .049 to .10 Engines

Only **\$14<sup>95</sup>** PRC1

Radio Control Flying is Fun! You can actually feel the thrill of controlling an airplane in flight — doing stunts, loops and rolls — and making it come back to you and land where you want. And the shortest way to success is with the unique new RANGER 42. This model has been carefully engineered, leaving only the simplest final assembly steps, all clearly illustrated. Flight stability is exceptional, as well as response to control. All you have to do is add your engine, wheels, and radio control — only 6 to 8 hours work — and you're ready to go FLYING! Just ask your hobby dealer — he'll be glad to show you the features.

## SKYLANE 62

Semi-Scale Beauty in A  
Great Flying Model!

DELUXE — Includes New Fittings

### 1/2 A SKYLANE \$8<sup>95</sup>

For Single Channel —  
Escapement, Servo or Pulse  
Span 42" Area 244 sq. in.  
Length 35" Weight 22 oz.  
For .049 Engines

Tough, roomy cabin and front end, takes single  
to 10 channels or proportional.

Steerable nose gear.  
SPAN 62" AREA 540 sq. in.  
LENGTH 50" WEIGHT 4 1/2 - 5 lbs.  
FOR ENGINES FROM .19 to .35

\$29<sup>95</sup>

The Design That  
Makes The  
Simplest, Sound,  
Attractive Airplane

## THE FAMOUS FALCON

### SR. FALCON \$29<sup>95</sup>

DELUXE — Includes New Fittings.  
For 10 Channels or  
Proportional  
Span 69" Area 810 Sq. In.  
Length 53" Weight 6 1/4 lbs.  
For .35 to .45 Engines

### FALCON 56 \$16<sup>50</sup>

DELUXE — Includes New Fittings.  
Takes Single to 10 Channels or  
Proportional  
Rudder-Only or Multi-Training  
Span 56" Area 558 sq. in.  
Length 43" Weight 3 1/2 lbs.  
For .09-.15-.19 Engines

### Junior FALCON \$5<sup>95</sup>

DELUXE — Includes New Fittings.  
For Single Channel —  
Escapement, Servo or Pulse  
Span 37" Area 250 sq. in.  
Length 28" Weight 16 oz.  
For .049 Engines

The Goodyear Racer with  
Enough Wing Area and  
Stability so YOU  
Can Fly It!

\$24<sup>95</sup>

DELUXE — Includes New Fittings

FOR 6, 8, 10 CHANNELS OR PROPORTIONAL

SPAN 54" AREA 540 Sq. in.  
LENGTH 44" WEIGHT 4 1/2 - 5 lbs.

FOR .19-.40 ENGINES

## Skoestring

Most Beautiful R/C  
Ever Kitted!

World's FIRST  
Single or  
Twin Engine  
R/C Models

## SKYLARK

DELUXE — Includes New Fittings

### SKYLARK 56 \$18<sup>95</sup>

Takes Single to 10 Channels  
or Proportional  
Span 56" Area 528 sq. in.  
Length 44" Weight 3 1/2 - 4 1/2 lbs.  
For Single Eng. .09, .15, or .19  
For Twin Eng. Use Two .09's or .15's

### JR. SKYLARK \$6<sup>95</sup>

For Single Channel —  
Escapement, Servo or Pulse  
Span 37" Area 235 sq. in.  
Length 29" Weight 18 oz.  
For Single Engine Use .049  
For Twin Eng. Use Two .01's or .02's

P.S. For best service, see your dealer for kits you want. If not available,  
write direct; add 35¢ per kit in U.S., 75¢ outside U.S. Minimum order \$1.

Send 10¢ for 4-pg. Illustrated Catalog, with  
recommendations on "Getting Started in R/C."

# CARL GOLDBERG MODELS INC.

2545 WEST CERMAK ROAD • CHICAGO, ILLINOIS 60608



now packaged **STRAIGHT...**  
in a Slim-Pak • with all hardware!

# NYROD®

**ORIGINAL COIL-PAK** (now with NYRODapter)  
available in 30" or 48" lengths

**SU-PR-LINE  
PRODUCTS**

PLAINFIELD, ILL. 60544

ORDER . . . BUILD . . . FLY . . . NOW!

## Sudden Service Plans

Full-Size Plans — Shipped First Class Mail

Within 48 Hours — No Extra Charge

#A691, **EAA Biplane** — Nick Zirol's flying-scale, R/C model uses a .40 engine and full-house multi gear. It has constant-chord, 38" span wings with a semisymmetrical foil and a box and stringer type of fuselage. Two sheets. **Price — \$2.50**

#A692, **Miracle Worker** — build John Blum's control-line trainer; learn how to fly four competition events: combat (fast and slow), carrier and stunt. Easy-to-build profile model has just one wing planform. Use a .35 size engine. **Price — \$1.50**

#A694, **Montana Duster** — a R/C Class C stunt model by Simon Drees that has a semi-scale appearance. Foam wings and a simplified structure cut assembly time to 6 hrs. A two-sheet plan shows a low-cost usage of sheet balsa. **Price \$3**

#A696, **New Englander** — George Murphy's functional and dependable 1/2A Free-Flight model for competition. NACA 6409 wing airfoil gives rapid climb with a floating glide. It's a good design for the fly-eager to try contests. **Price — \$1.50**

### PLANS FROM THE 1969 ANNUAL!

#A693, **Sweeper** — Windy Urtnowsky's giant, control-line stunt model has a 78" span and flies nicely with a .60 up front. Though large, this competition design is practical and highly developed with many trim adjustment features. **Price — \$2.50**

#A695, **Lady Maxley** — Brian Donn's A/2 Nordic towline glider has seen much contest flying and development. Wing has a Davis 3 airfoil with a Ritz-type of construction. Form the balsa tube fuselage with a pool cue. **Price — \$1.50**

#A697, **Dwarf Dip III** — easy-to-fly, rubber-powered Coupe de Hiver design by Charles Sotich is a winner! Great fun for smallish fields, the high-performance model has a warp-resisting structure with an efficient configuration. **Price — \$1.50**

Plans—from **AMERICAN AIRCRAFT MODELER** construction articles—are well-detailed, high-quality, blue-line prints.

ORDER BY PLAN NUMBER AND NAME; SEND REMITTANCE TO:

**American Aircraft Modeler  
SUDDEN SERVICE PLANS  
733 15th St., N.W., Washington, D.C. 20005**

These prices apply only to U.S. (includes APO's and FPO's) and Canadian orders. Add 25% for shipment to foreign countries.

shapes; take a #11 X-acto blade, fit it in the X-acto holder, or use a single-edge razor blade, which has been taped with masking tape along about 3/4ths of the cutting edge. This will protect your fingers when you get engrossed in cutting out the intricate camouflage pattern. Use the cuticle scissors to make smoother curves than you will be able to get with the X-acto or razor blade. A word of explanation: please remember that the pattern of masking tape which you will apply from your cutouts will remain silver on the finished model. The other areas will be green. On the model shown in the article, I wanted the camouflage to be predominately silver. If you prefer that the green be the more prominent of the two, then make your camouflage pattern half the size, i.e.: trim away the patterns to the size you prefer.

I will explain the method I used to apply the cutout camouflage pattern. After the shape was trimmed to my satisfaction, I applied it to the model. As each piece was cut, I applied it. One on the wing tip, one on fuselage side, one here, there, and everywhere, until I was satisfied with it. It looks like a jigsaw puzzle cutout when you get through with it. If you feel that some of the masking tape has resulted in a pattern you do not like, remove with tweezers and either reposition them or trim them down. After final pattern is on plane, do some other part of the plane, or some other task — anything else — and then reinspect your camouflage pattern. You will find that you will be able to look at your handiwork far more objectively than before.

Mask off and spray the anti-glare panel black; then after dry, remask so that when you spray the green the panel will remain black. Next, mask off the edges of both wings and spray yellow. After yellow has dried, remask well so that the green will not seep through the masking tape.

Paint the cockpit flat black and mask off so that no green will be sprayed on the cockpit. Paint tires with "Tire Color" (Official Paints has an excellent ready-mixed paint for this purpose and their exhaust stack paint is also very effective).

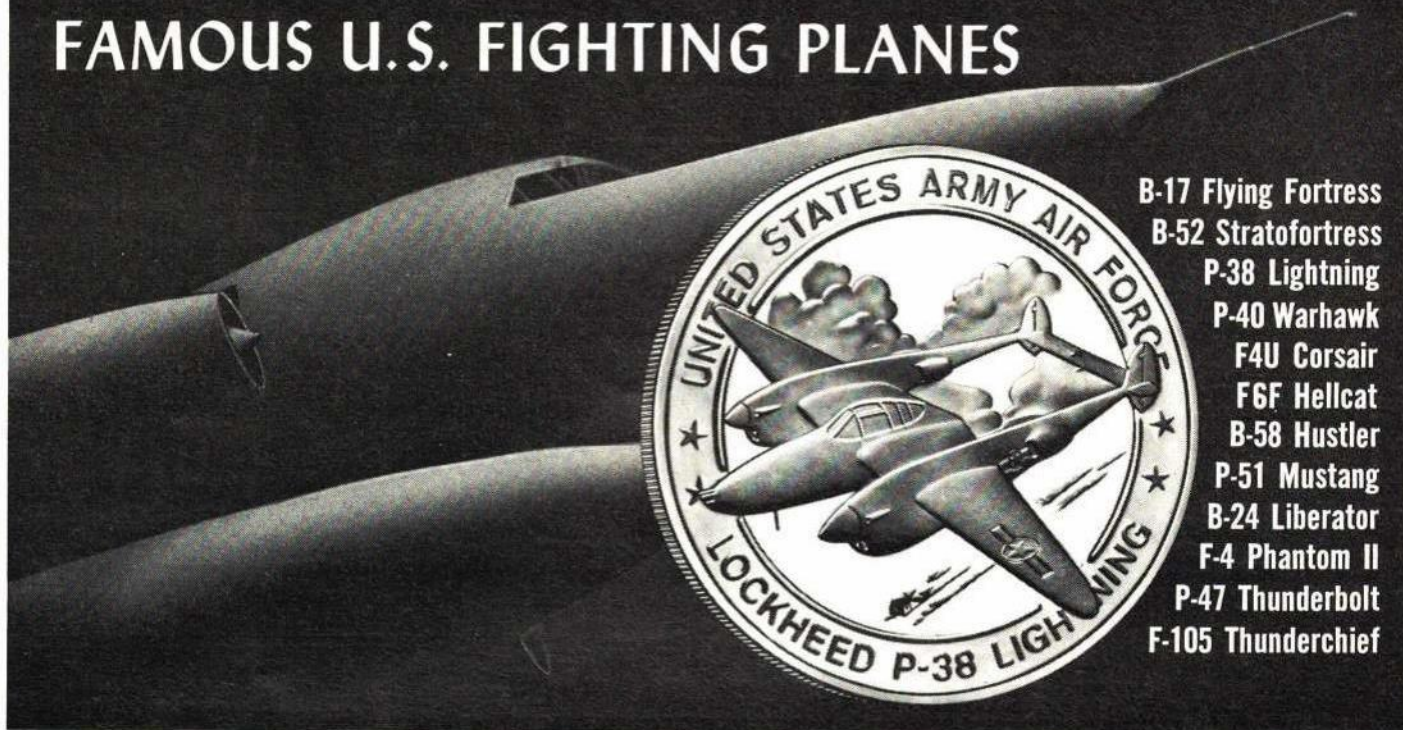
Mask and spray yellow stripes on each landing gear cover. Propeller blades are flat black all over and the spinner is reddish-brown.

Now to spray the camouflage green. Your paint must be as thin as you can get it and still be able to handle. If you check photos, you will see that there is no buildup of green paint around the patches of masking tape where they meet the silver painted areas. Be very careful and spray the paint on very lightly. Don't try to cover with the green in one spraying as this is almost impossible to do without ruining your paint



For the first time . . . 12 air classics captured in a Limited Edition coin-medal collection . . . available by subscription only.

# FAMOUS U.S. FIGHTING PLANES



B-17 Flying Fortress  
B-52 Stratofortress  
P-38 Lightning  
P-40 Warhawk  
F4U Corsair  
F6F Hellcat  
B-58 Hustler  
P-51 Mustang  
B-24 Liberator  
F-4 Phantom II  
P-47 Thunderbolt  
F-105 Thunderchief

The world's first collection of coin-medals honoring 12 of our nation's air classics can be yours to own and treasure. Dramatic bas-relief portraits of the fighting planes that winged their way into history are superbly captured in a unique coin-medal collection destined to grow in importance and value.

All the aircraft, selected from World War II to the present, are skillfully and faithfully rendered for The Gannon Collections by the Franklin Mint . . . famed for unexcelled artistry and workmanship. Each medal, 1½" in diameter . . . slightly larger than a U.S. Silver Dollar . . . will be struck from hand sculpted dies and minted with a brilliant finish reserved for medals of historic importance.

Each medal depicts an air classic soaring in flight in three-quarter view, with branch of service and military designation. The reverse side shows the aircraft in three silhou-

ette views and lists weaponry and technical data.

Available in Nickel-Silver or Solid Sterling Silver, this series of 12 commemorative medals will be issued to Subscribers at the rate of one per month. **But the quantity is definitely limited. The Nickel-Silver Set is limited to the first 10,000 Subscribers. The Solid Sterling Silver Series will be limited to the first 2,500 Subscribers.** This series is available only from The Gannon Collections.

**The Nickel-Silver Series** will be struck in a handsome, proof-like finish. The cost is \$3.50 per medal, payable on a monthly basis. If payment is made in advance for the entire series of 12 medals, the cost is only \$35.00, a substantial savings.

**The Solid Sterling Silver Series** is being struck in a full-proof finish. In addition, each medal is to be hallmarked to authenticate its highest quality status. The cost of each medal,

payable on a monthly basis, is \$12.50. If payment is made in advance for the entire series of 12 medals, the cost is \$125.00, a substantial savings.

**With either series, your subscription price is guaranteed to remain the same regardless of any increase in precious metal costs.**

Whether you select the Nickel-Silver or Solid Sterling Silver Series, here is a once-in-a-lifetime opportunity to acquire at moderate cost this heirloom collection. A lasting gift and sound investment for you and your grandchildren for generations to come . . . if you act now.

**FREE DELUXE DISPLAY FRAME**  
For desk top or wall display sent with every subscription. Coin Album also available. Check coupon for choice.



**The Gannon Collections**  
Paoli, Pennsylvania 19301



**The Gannon Collections, Number One Matthews Road, Paoli, Pennsylvania 19301**

Gentlemen: Please enter my Subscription for \_\_\_\_\_ full sets of 12 Commemorative Coin-Medals of FAMOUS U.S. FIGHTING PLANES, to be issued at the rate of one per month, postpaid. If the series is over-subscribed, my remittance will be refunded.

Please strike my Commemorative Set in:

**Nickel-Silver Series**  
☐ \$35.00 prepayment  
☐ \$3.50 per medal per month  
**Solid Sterling Silver Series**  
☐ \$125.00 prepayment  
☐ \$12.50 per medal per month

I desire: (check one)  
☐ FREE DISPLAY FRAME  
OR  
☐ FREE COIN ALBUM AA

If I do not prepay for the entire series now, I herewith enclose the amount for the first medal and agree to pay for each subsequent medal upon being invoiced on a monthly prepayment basis.

Enclosed is my remittance for \_\_\_\_\_\* (check or money order).

NAME \_\_\_\_\_

STREET \_\_\_\_\_

CITY \_\_\_\_\_

STATE \_\_\_\_\_ ZIP \_\_\_\_\_

SIGNATURE \_\_\_\_\_

\*Plus 6% sales tax, if you are a resident of Penna.



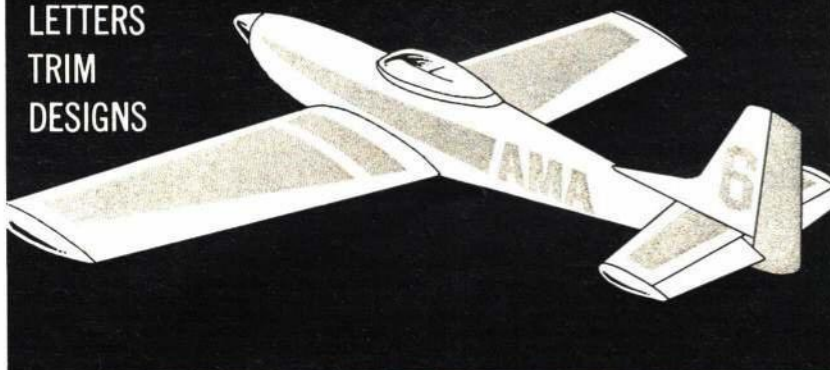
ANNOUNCING . . . ALL NEW . . .

SOLID COLOR 17" x 22"

# FLUORESCENT

DAYGLO DECAL SHEETS

FOR  
NUMBERS  
LETTERS  
TRIM  
DESIGNS

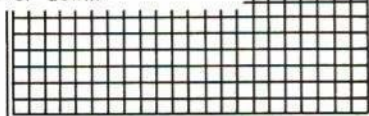


YOUR CHOICE OF COLORS:

● DAYGLO RED ● DAYGLO ORANGE  
● DAYGLO YELLOW ● DAYGLO GREEN

## EXCLUSIVE LAYOUT GRID

The back of each sheet is printed with grid of 1" squares, together with instructions on how to use the grid for transferring designs, and scaling up or down.



Finishing Touch Fluorescent DayGlo sheets are the only DayGlo material designed exclusively for the modeler . . . dope-proof . . . fuel-resistant . . . double adhesive . . . guaranteed quality. Put the Finishing Touch on YOUR next model.

# \$298

PER SHEET

SOLD AT MOST HOBBY  
STORES

*Finishing*  
**TOUCH**  
DECALS

5940 EAST PAISANO • EL PASO, TEXAS 79925

SEND 25¢ TODAY FOR NEW FULL-COLOR CATALOG



Ready to Fly R/C Glider  
CLOUD 9 - 72" Wingspan

.049 Engines. Rudder or Rudder and Elevator. Cloud 9 is Pre-built. Requires only minutes to assemble. Lightweight May-Ply Plywood Fuselage. Balsa sheeted wings. Empty weight 10½ oz.

\$37.50

The Most Relaxing - Delightfully Challenging Flying.

The Sky Is The Limit with Cloud 9.

Plus 8 other ready to fly models. 7 prefab kits. Min-X radio equipment specials. Our fourth year in helping the beginner. Send to:

MYERS MODELS & CO.

STEWARTSTOWN, PA. 17363

job. My model required three sprayings before the right coverage had been reached. Each spraying was done with the lightest touch, as I intended only to barely tint the silver with the green.

Black car tape was used on the wind screen and canopy. One thing was done a little differently. After the black car tape was in place, I painted over the black tape with the green paint, using a soft brush. This gives a very finished effect.

At this point the patches can be pulled off. For safety first, keep the pieces of tape cutouts in case you would have to do a section over again. It would be impossible to duplicate the curlicues on another cutout. As you remove each cutout, check to see that paint has not seeped under tape. Put each removed cutout back on the plastic.

You should have a beautiful plane at this stage, and you can now take off the masking tape from the anti-glare panel, the tape applied to the landing gear covers, and leading edge of both wings.

Cut the decals as close to the color as possible; soak and apply and your plane is now ready for display in your "Museum in Miniature."

## THE MAIL BAG

Spacecraft recently played an important part both on the newsfront and on the plastic kit front. Latest package from Monogram contained the 1/144 scale Apollo PS-193 Saturn Moon Rocket kit (priced at \$6 retail). This is a very complete kit in every respect, and the illustrated brochure describing it is most educational.

ESTES  
EXCITING



COUNTDOWN AND GO!  
with Estes into a  
new realm of  
excitement

New adventure, new  
satisfaction, new  
space age knowledge  
... your's through  
the up-to-date pro-  
gram of rockets by  
Estes.



● COMPLETE  
STARTER KIT

High flying ready-to-as-  
semble 12" long Alpha-  
rocket including all parts,  
2 engines, self-contained  
Electro-Launch with bat-  
teries. # DSK-70 \$7.00

ESTES

ALL ESTES MODELS  
GOOD FOR MANY FLIGHTS  
WITH PARACHUTE  
RECOVERY AND  
FLIGHTS TO 2500 FT.

● SPECIAL  
STARTER KIT

Same as above  
but without Electro-  
Launch.

# DSK-20 \$2.00

COLOR CATALOG ONLY 25¢  
(FREE WITH ORDER)

Order your Starter Kit now  
... and find a new world of  
aero-space adventure

# ESTES INDUSTRIES

Dept. 4 Penrose, Colorado 81240

STARTER SPECIAL includes Alpha Kit, 2 engines, design man-  
ual, instructions. # DSK-20 ..... \$2.00  
SAME AS ABOVE plus Electro-Launch. # DSK-70 ..... \$7.00  
Huge 132 page color catalog (free with order) ..... 25¢

Name .....  
Address .....  
City ..... State ..... Zip .....

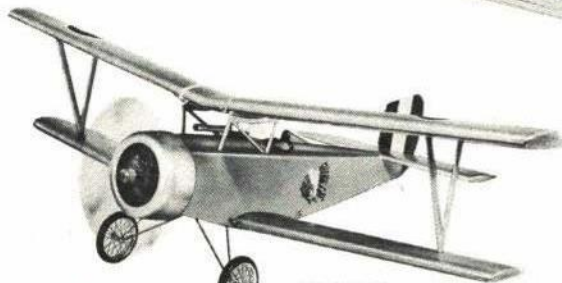


# MIDWEST



Das Little Stik  
Multi-channel trainer  
Wing Span 46 ins.  
Wing Area 414 sq. ins.  
Engines .19 to .23  
\$22.95

Lil "T"  
R/C Glider  
Wing Span 74 ins.  
Wing Area 480 sq. ins.  
\$16.95



Nicuport 17  
Galloping Ghost  
Wing Span 44 ins.  
Wing Area 504 sq. ins.  
Engines .15 to .19  
\$19.95



MIDWEST PRODUCTS CO.

400 S. INDIANA  
HOBART, IND.

All three stages of the rocket are contained in the kit. The main feature is that the separate rocket stages can be assembled and disassembled. This allows for a good breakdown of the actual spacecraft itself and illustrates its various separations in flight. Kit parts are white plastic with clean castings and scarcely any flash and with excellent instructions for assembly. This is an excellent kit for classroom study.

Revell's Apollo kit also is excellent; the unit members being the main difference. Theirs is the Apollo Lunar Spacecraft H-1838, also selling for \$6. Only the last stage of the rocket assembly is included; the kit is in 1/48 scale.

Both kits actually are on a par—including excellence of parts and assembly, and the Revell illustrated brochure, although treated a bit differently, is equally informative.

The Revell kit is made of five detailed sections: the command module, service module (Launch Escape Tower is detachable), lunar module (with folding legs) nests within the Apollo-Saturn Adapter Section during flight. Three Astronaut figures for the Command Module are included as are two display bases. Entire unit is over 20" high when assembled.

Also, in the space line, Revell has the following comparatively new kits: 1/96 scale Apollo Spacecraft; 1/24 Gemini Spacecraft; X-15 Rocket Plane; 1/48 Mercury Capsule with Atlas Booster, and Mercury Capsule with Redstone Booster.

Following are updated re-issues from Revell (kits contain new decals, new artwork): A-5A Vigilante, H-134 at \$1; Convair F-102 Delta Dagger, H-130 for \$1; Douglas X-13 Stiletto, H-135 at \$1; Martin B-57B Intruder (British design, Viet Nam color scheme and decals) H-132 for \$1; Saab J-35 Dragon—1/72 scale Swedish jet fighter, H-131 for \$1; LTV A-7D Corsair II, 1/72 scale Fighter-Bomber, H-133 for \$1; Mercury Gemini, H-1834 for \$1.30 in 1/48 scale; Boeing SST Supersonic Clipper—two 18" scale models in each box, with Pan American markings.

Lindberg has the first American plastic kit of the G4M-2 Mitsubishi Japanese Bomber "Betty." The kit is in 1/72 scale, No. 576 for \$2. This aircraft saw action in every theater of operations in the Pacific during WWII. Named "Betty" by the Allies it scored many successes early in the war. But it was vulnerable to air/land attack due to the heavy armament installed which made it such an easy target. The final mission for two of these bombers was the transportation of the Japanese surrender team. That empties the Mail Bag for this month; something here will appeal to almost every reader.

**MANY FLYING SITES OPEN UP  
WITH INSURANCE PROTECTION**

## ED WISSER



MICRO-CUT Balsa



1ST. SCALE 1968 TOLEDO CONF.

1ST. SPORT FLYING 1969 TOLEDO CONF.

"Midwest balsa was chosen because it is precision sawn to exacting tolerances and double sanded to insure the smoothest working surface possible in the final finish in scale model building."

MIDWEST



MIDWEST

## B.O.M. Rule

Continued from page 50

of the model and should be allowed under the interpretation.

4. Based on the initial determination of the judge, some of the following questions might be asked of the contestant about his model, and the flyer should be expected to answer without prompting from anyone.

q—Is the model a kit, a modification of a kit or an original? Briefly explain in your own words.

q—What changes or modifications did you make? Briefly explain them.

q—How is the wing constructed, covered, finished?

q—How are the control horns installed?

q—How is the cowl removed? What is it made of? How did you make it?

Actually there are many questions that could be asked, but a qualified judge should be able to support or change his initial determination with only a few. Of course he should be aware that the modeler might not use proper terminology, and he may have to re-phrase his question occasionally, but the contestant should be able to explain in simple words or ELSE he or she should be disqualified.

5. This item would be the most automatic of all, and should be one of the first considerations. The Judge should check the modelers AMA license number on his or her card and on the airplane. They should match, and they should be permanent type numbers; ie., paint, decal doped tissue numbers etc. Marker pen and masking tape type numbers should not be acceptable. Also, apparent paint over or number tampering evidence on card or airplane should be highly suspected, and the Judge should get, and expect, an explanation, or else disqualify the contestant.

Joe further says:

I do understand that such decisions for disqualification can be unpopular. Contestants caught cheating won't like it at all and will raise a stink. The honest contestants will like it, and you can bet on that. A good aid to this at the initial stage is that Contest Directors provide signs stating the builder of the model rule, and also require that the contestant sign a statement at each event on his score sheet to the effect that "I have built the model(s) I am flying in this event according to rule 1.17"; both sign if team entry is indicated. In practice this does work; I have initiated the practice at my contests, and I shall continue to do so.

Contestants so disqualified should be able to protest immediately to the CD or event director. I suggest that he or she be given a signed statement by the disqualifying judge and a copy be retained for the record of the Contest Director—that is if the contestant states that he or she wants the statement. In any event, the reason and determination should be written on the contestant's score sheet and be signed by the judge; ie., contestant Joe Blow, AMA #000000, is disqualified—explanation of wing construction indicates he did not fully comply with rule 1.17. Signed I. B. Judge, AMA 00000, date, time, event and contest sanction number.

## Zip-along Cassidy

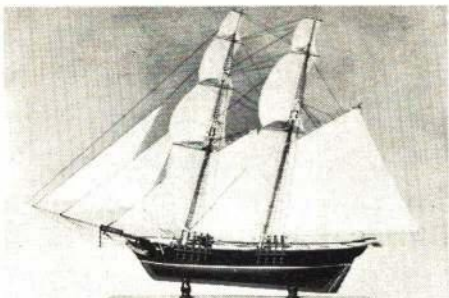


He Zip Codes ALL his mail

When new Postal Regulations go into effect, your mail will be delayed if it doesn't show your Zip Code. Start now to give your Zip Code as part of your address on ALL your mail.

HELP YOUR POSTOFFICE HELP YOU





Kit 172 BALTIMORE CLIPPER, Dos Amigos. 22½" Deluxe kit, printed cloth sails, metal fittings .....\$16.95



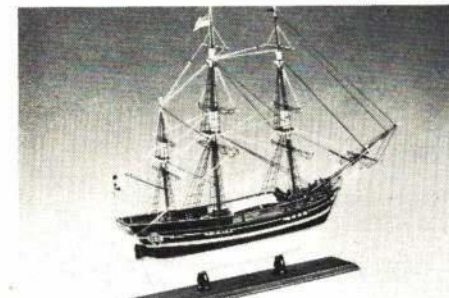
Kit 164 BLUENOSE. 24" Authentic sleek trim lines. Fine detail metal fittings, printed cloth sails .....\$16.95



Kit 165 SOVEREIGN OF THE SEAS. 23¾" — 1852 model. Collector's model. Kit has finely detailed parts .....\$16.95



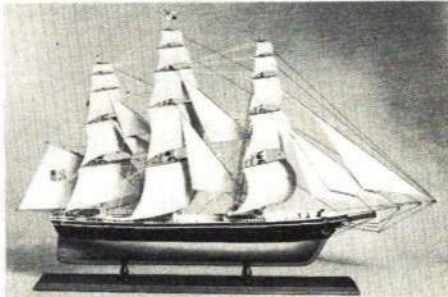
Kit 170 U.S.S. CONSTITUTION "Old Ironsides". Fought 40 battles successfully. Kit has cannons .....\$8.95



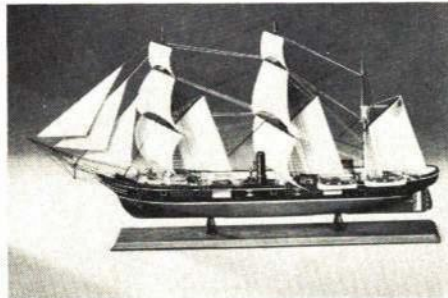
Kit 169 H.M.S. BOUNTY. 13½" most famous ship in history. Display it in home or office .....\$8.95



Kit 163 CUTTY SARK, CLIPPER SHIP. 23" exact scale replica of world's fastest ship. Printed sails .....\$16.95



Kit 171 SEA WITCH. Big 27¼" super deluxe kit. Printed cloth sails, realistic metal fittings .....\$16.95



Kit 166 U.S.S. KEARSARGE of Civil War fame. Big deluxe 27" ship printed sails, cast fittings .....\$21.95



Kit 168 U.S. Coast Guard EAGLE. 13" model is true replica. Printed cloth sails, metal fittings .....\$8.95



Kit 167 FLYING CLOUD, CLIPPER SHIP. 13¾" model. A collector's item you'll be proud to display .....\$8.95

**SCIENTIFIC MODELS, INC.**  
111 MONROE STREET • NEWARK, N. J. 07105

**SEE YOUR DEALER.** If kits are not available at dealer, you may order direct from factory adding 50c for postage & handling. Outside U.S.A. add \$1.00. Send for Catalog. 25c.

CD, 347 Southwick Rd., Westfield, Mass. 01085. Sponsor: Northern Conn. RC Club.

June 8 — Colorado Springs, Colo. Pikes Peak 5th Annual Fun Fly. Site: Black Forest Glider Port. B. Hayhurst CD, 1219 Oswego, Colorado Springs, Colo. 80904. Sponsor: Pikes Peak RC Club.

June 8 — Queens, N. Y. (AA) Luftmeister Custom Tailored Navy Carrier Profile Meet. Site: Flushing Meadow Park (Pending). J. Condon II CD, c/o 131-30 223 St., Laurelton, N. Y. 11413.

June 8 — Sioux Falls, S. D. (AA) Annual Spring FF Meet. Spec. Jr. Event 12 yrs. & under. D. Niedert CD, 901 S. Glendale Ave., Sioux Falls, S. D. 57104.

June 8 — Great Southwest, Tex. FAI FF Qualifying Trials. Site: Country Rd. & Chapel Rd. W. McCormick CD, 4612 Pleasant St., Ft. Worth, Tex. 76115. Sponsor: Ft. Worth Planesmen.

June 8 — Valley Park, Mo. (AAA) Greater St. Louis Modeling Assn. Annual CL & RC Contest. Site: Buder Park Model Airplane Field. B. Johnson CD, 6328 Jackson, Berkeley, Mo. 63134.

June 8 — Sacramento, Calif. (AA) No. Calif. FF Council 3rd Meet. Site: Jackson Rd. & Sunrise Ave. J. Pond CD, 2162 43rd Ave., San Francisco, Calif. 94116. Sponsor: San Francisco Vultures.

June 13-15 — Pensacola, Fla. (AAA) Fiesta Five Flags 11th Annual South Eastern Model Championships for FF, CL & RC. RC & CL Site: Corry Field. FF Site: 8A. T. McLaughlin CD, 4140 Fern Ct., Pensacola, Fla. 32503.

June 13-15 — Asheville, N. C. (AA) RC NC 15th Annual RC Invitational. Site: Asheville-Hendersonville Airport. B. Johnson CD, 4139 Sheridan Rd., Greensboro, N. C. 27405.

June 14-15 — Ft. Worth, Tex. (AA) Ft. Worth Thunderbirds RC Club Meet. Site: West Shore, Benbrook Lake. R. Lutker CD, 3105 Cockrell Ave., Ft. Worth, Tex. 76109.

June 14-15 — Nedrow, N. Y. Syracuse RC Flying Jamboree. E. Izzo CD, 3950 Highland Ave., Skaneateles, N. Y. 13152. Sponsor: Syracuse ARCS.

June 15 — Cleveland, Ohio (AAA) Cleveland Sport Race & Annual 500 CL Meet. Site: Cleveland Flying Field. A. Montagino CD, 3911 Daisy Ave., Cleveland, Ohio 44109.

June 15 — Grandview, Mo. (AAA) 2nd Annual Kansas City Regional CL Championships. Site: Richards-Gebaur AFB. B. Wright CD, 2818 Collin, Independence, Mo. 64052. Sponsor: Sky Devils MAC.

June 15 — Ft. Lewis, Wash. (AA) 1st Annual PuGet Sound FF Contest. Spec. OT events. Site: Area 20. B. Gale CD, 811 9th Ave. S.W., Puyallup, Wash. 98371. Sponsor: PuGet Sound FF Club.

June 15 — Taft, Calif. (AA) Old Timer Gas & 30 Sec. Antique Meet. Site: Gardner Field. G. Wallock CD, 220 LeRoy Ave., Arcadia, Calif. 91006. Sponsor: SCAMPS.

June 15 — Richmond, Va. Brainbusters FAI FF Qualification Trials. Site: Curles Neck Farm. F. Seddo CD, 113 Peach Tree Lane, Hampton, Va. 23699. Sponsor: Brainbusters.

June 15 — Davenport, Iowa (AA) 12th Annual CL Meet. Site: Airport. R. Norgard CD, 2324 W. 29th St., Davenport, Iowa 52804.

June 15 — York, Pa. (AA) York Line Tamers Annual Round Up for CL. Site: Caterpillar Tractor Co. F. Skelly CD, 2227 W. Market St., York, Pa. 17404. Sponsor: York Line Tamers.

June 15 — Forest Preserve, Ill. (AA) Skylarks 2nd Annual RC Meet. Site: Rt. 53 & Higgins Rd. H. Brokhof CD, 410 Nash Rd., Crystal Lake, Ill. 60014. Sponsor: Skylarks.

June 15 — Hawthorne, Mass. (AA) NMAA Annual CL Meet. Site: Athletic Field. R. Gaertner CD, 9 Brookbridge Rd. W., Peabody, Mass. 01960. Sponsor: Northshore Model Aircraft Assn.

June 15 — Moundsville, W. Va. IFO Fun Fly for RC. Site: Fair Grounds. S. Sturm CD, Box 5234, Vienna, W. Va. 26101. Sponsor: Valley IFO MAC.

June 15 — Haskell, Tex. (AA) Annual Sun & Fun FF Contest. Site: Haskell Airport. C. Frierson CD, Box 188, Haskell, Tex. 79521. Sponsor: Dallas Cloud Climbers.

June 15 — Deer Lake, Pa. (AA) Tri County Wing Snappers 7th Annual RC Meet. Site: Airport. E. Stoyer II CD, 210 Washington St., Schuylkill Haven, Pa. 17972. Sponsor: Tri County Wing Snappers, Inc.

June 15 — St. Charles, Mo. 1½ Hour Pre-planned RC Flying Demonstration. Site: Air Field. Restricted. R. Williams CD, 4060 Bondurante Dr., Bridgeton, Mo. 63042. Sponsor: Spirits of St. Louis RC Club.

June 21-22 — Davenport, Iowa (AA) Davenport RC Society Contest. Site: Scott County Park. H. Pohlmann CD, 720 S. Ohio, Davenport, Iowa 52802.

June 21-22 — Ft. Worth, Tex. (AAA) Eastside Lions Club CL Annual. Site: Boaz Model Field. B. Davis CD, 1613 Carl, Ft. Worth, Tex. 76103.

June 21-22 — Creve Coeur, Mo. (AA) Spirits of St. Louis 3rd Annual RC Contest. Site: Spirits Field. W. Butters CD, 2565 Bradwell, Florissant, Mo. 63033. Sponsor: Spirits of St. Louis RC Club.

June 21-22 — Dayton, Ohio (AAA) Wright Brothers Memorial Annual RC Meet. Site: Wright Patterson AFB. D. Lowe CD, 5936 Clar-Von Dr., Dayton, Ohio 45430. Sponsor: Western Ohio Radio Kontrol Soc.

June 21-22 — Wallops Station, Va. (AA) Mid Atlantic Radio Kontrol Society RC Meet. H. Jones CD, 59 Aigburth Ave., Towson, Md. 21204. Sponsor: Mid Atlantic Radio Kontrol Society.

June 21-22 — Denver, Colo. (AA) 11th Annual Mile Hi RC Meet. Site: Lowry AFB. W. Kessler CD, 4765 E. Eliff, Denver, Colo. 80222. Sponsor: Mile Hi RC.



June 21-22 — S. C. (AAA) S. C. State Championships for RC. Site: Off I-85 between Greenville & Spartanburg. L. Johnston CD, 382 Church St. #E-3. Smyrna, Ga. 30080. Sponsor: Western Carolina RC Club.

June 22 — St. Clair Shores, Mich. (AA) St. Clair Shores Modelers 15th Annual CL Meet. Site: 14 Mile Rd. & Harper. T. Craft CD, 29921 Rosemont, Roseville, Mich. 48066.

June 22 — Green Bay, Wis. Summer Jamboree for Special RC Events. Site: Austin Straubel Field. R. Cowles CD, 2424 Ducharme Lane, Green Bay, Wis. 54301. Sponsor: Green Bay RUF.

June 22 — Hastings, Minn. Minneapolis FAI Qualifications for FF. Site: Webers Flying Field. D. Monson CD, 131 W. Wentworth Ave., W. St. Paul, Minn. 55118. Sponsor: Minneapolis Model Aero Club.

June 22 — Orchard Park, N. Y. Flying Knights 5th Annual RC Fun-Fly. Site: Airport. N. McCormack CD, 6709 Hillcroft Dr., Boston, N. Y. 14025. Sponsor: Flying Knights of Hamburg.

June 22 — Bristol, Conn. (AA) Hornets Model Classic for CL. Site: Edgewood School. J. Scott Jr. CD, 265 Witches Rock Rd., Bristol, Conn. 06010. Sponsor: Hornets MAC.

June 22 — St. Marys, Pa. 3rd Annual Fly-for-Fun for RC. Site: Club Field, West Creek Rd. J. Florio CD, 123 Fourth St., St. Marys, Pa. 15857. Sponsor: St. Marys Area RC Society.

June 22 — Odessa, Tex. Odessa-Midland 13th Annual FF Contest. Site: Prop Buster Park, Ector Airport. L. Hood CD, P. O. Box 6622, Odessa, Tex. 79760. Sponsor: Prop Busters of Odessa.

June 22 — Council Bluffs, Ia. (AA) 6th Annual Midwestern Model Airplane CL Meet. Site: Iowa School for Deaf. J. Dreier CD, 1918 Ave. B., Council Bluffs, Ia. 51501. Sponsor: Balsa Busters.

June 22 — Pittstown, N. J. Rockaway Valley RC Club 2nd Annual Novice Meet. Contact CD for rules. Site: Sky Manor Airport. A. Schroeder CD, 18 Spencer Rd., Glen Ridge, N. J. 07028. Sponsor: Rockaway Valley RC Club.

June 28-29 — Tulsa, Okla. FAI FF Qualifications. Site: TGD Field. B. Hanford CD, 3838 S. 88th E. Ave., Tulsa, Okla. 74145. Sponsor: Tulsa Glue Dohers.

June 28-29 — Hempstead, L. I., N. Y. (AA) 5th Annual RC Meet. Site: Mitchel Field. R. Geyer CD, 913 Washington St., Baldwin, N. Y. 11510. Sponsor: Meroke Radio Club.

June 28-29 — Wichita, Kans. (AAA) Annual Midwestern Championships for FF, CL & RC. Site: Wichita Modelers Council Field, 13th & Webb Rd. J. Finley CD, 5217 E. Murdock, Wichita, Kans. 67208. Sponsors: Wichihawks & Wichita RC.

June 28-29 — Richmond, Va. (AA) RARC 9th Annual RC. Site: Oilville Field. F. Gregg CD, 12709 Richmond St., Chester, Va. 23831. Sponsor: Richmond Area RC.

June 28-29 — Detroit, Mich. (AA) 17th Annual Great Lakes RC Meet. Site: 18 Mile & Mound Rd. T. Brett CD, 18864 Millar Rd., Mt. Clemens, Mich. 48043. Sponsor: RC Club of Detroit.

June 28-29 — Greenville, Miss. (AAA) Mississippi Model Airplane Champs for FF, CL & RC. Site: Old Municipal Airport. J. McLellan CD, 12 Woodlawn, Yazoo City, Miss. 39194.

June 28-29 — Kansas City, Mo. (AA) KC RC Annual RC Contest. Site: Lake Jacomo. B. Drummond CD, 9115 Charlotte, Kansas City, Mo. 64131. Sponsor: Kansas City RC Club.

June 29 — Irving, Tex. FAI FF Qualification Trials. Site: New S.W. Airport. B. Wilder CD, 2010 Boston, Irving, Tex. 75060. Sponsor: Dallas Cloud Climbers.

June 29 — Granite City, Ill. FAI FF Qualifying Trials. Site: Lakeside Airport. D. Linstrum CD, 12411 Leigh Lane, Maryland Hts., Mo. 63042. Sponsor: Kirkwood Thermaleers.

June 29 — Cortland, Ohio Trumbull Co. RC Fun Fly. Site: Thomas Farm. B. Waterman CD, 2821 Red Fox Run Dr. N.W., Warren, Ohio 44485. Sponsor: Trumbull Co. RC Club.

June 29 — Fresno, Calif. (A) Fresno Monthly FF Meet. Site: Near Kerman. F. Gallo CD, 1725 Kenmore Dr. W., Fresno, Calif. 93703. Sponsor: Fresno Gas Model Club.

June 29 — Lincoln Park, N. J. (AA) East Coast Scale Championships for CL. Site: GSCB Airdrome. E. Dickson CD, 36 Vreeland Ave., Clifton, N. J. 07011. Sponsor: Garden State Circle Burners.

June 29 — St. Paul, Minn. (AAA) 10,000 Lakes CL Championships. Site: State Fair Grounds. R. Kampmann CD, 18525 26th Ave. No., Watzata, Minn. 55391. Sponsor: Minneapolis Piston Poppers.

June 29 — Arlington, Tex. 2nd Annual Golden Triangle RC Clubs WW I Contest. Site: North Lake Flying Site. D. Downing CD, 403 Monroe, Arlington, Tex. 76010.

June 29 — Odessa, Tex. (AA) Odessa-Midland 13th Annual CL Contest. Site: Ector Airport. L. Hood CD, P. O. Box 6622, Odessa, Tex. 79760. Sponsor: Prop Busters of Odessa.

June 29 — Rockford, Ill. (AAA) Rockford Annual Contest for CL. Site: Riverdahl School Playground. W. Luhman CD, 4429 Virginia Ave., Rockford, Ill. 61103. Sponsor: Rockford Aeromodelers.

June 29 — Lowry AFB, Colo. (AA) Sky Dusters 7th Annual CL Contest. Site: South of Hangar 2. E. Haynes Jr. CD, 3065 Jackson St., Denver, Colo. 80205.

June 29 — Columbus, Ohio (AA) Northland CL Championships. Site: Northland Shopping Center. C. Hemmerly CD, 5607 Sandalwood Blvd., Columbus, Ohio 43229. Sponsor: Capital City Controllers.

July 4 — Mentor, Ohio (AA) MARCS All Pylon Day. Site: Club Field — Grass. F. Vidmar CD, 26500 Zeman Ave., Euclid, Ohio 44132.

July 4-5 — Tullahoma, Tenn. (A) U-Control Meet.

## CONTROL-LINE PLANES

Gas Powered Models for Small 1/2A Engines .010 to .074,

*Scientific*



Kit 95 PIPER CUB TRAINER. 18" Carved body, shaped wing.....\$2.95



Kit 54 CESSNA "182" TRI-CYCLE. 18" Carved body, shpd wing \$3.95



Kit 149 RED TIGER P-40. 19" Bilt-up wing, formed cowl .....\$2.95



Kit 59 P-40 FLYING TIGER. 18" Carved body, shaped wing ...\$3.95



Kit 142 ZIPPER. 19" Bilt-up wing and body, etc. ....\$2.95



Kit 74 MESSERSCHMITT ME-109. 18" Carved body, shpd wing \$3.95



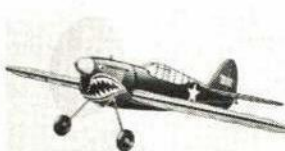
Kit 29 LITTLE BIPE. 18" — Carved body and shaped wings .....\$2.95



Kit 65 ZIG ZAG. 18" Carved body, shaped wing .....\$2.95



Kit 140 BIG OTTO. 24" Great Combat Flyer .....\$3.95



Kit 92 P-40 WARHAWK. 21" Bilt-up wing, formed cowl .....\$3.95



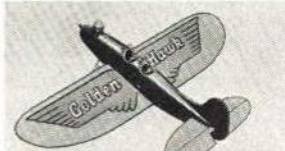
Kit 7 CESSNA "180". 18" Carved body, shaped wing .....\$3.95



Kit 8 PIPER CUB CRUISER 18" Carved body, shaped wing ...\$3.95



Kit 144 SIZZLIN LIZ. 18" Bilt-up wing and body, etc. ....\$2.95



Kit 48 GOLDEN HAWK. 18" Carved body, shaped wing .....\$3.95



Kit 14 PIPER TRI-PACER. 18" Carved body, shaped wing .....\$3.95



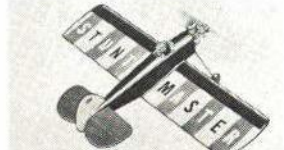
Kit 71 KINGPIN. 50 sq. in. wing Bilt-up wing, formed parts.....\$2.95



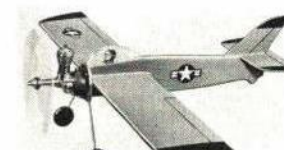
Kit 60 STUKA DIVE BOMBER. 18" Carved body, shaped wing ....\$3.95



Kit 6 CESSNA BIRD DOG. 18" Carved body, shaped wing .....\$3.95



Kit 25 STUNTMASTER. 18" Carved body, shaped wing .....\$3.95



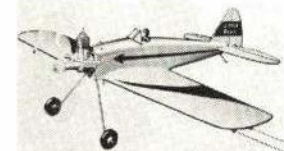
Kit 50 E-Z TRAINER (Profile). 18" Preshaped balsa wing .....\$2.95



Kit 18 LITTLE MUSTANG. 18" Carved body, shaped wing .....\$3.95



Kit 30 RED DEVIL. 18" Carved body, shaped wing .....\$3.95



Kit 28 LITTLE DEVIL. 18" Carved body, shaped wing .....\$2.95



Kit 53 RED FLASH. 18" Carved body, shaped wing .....\$2.95

SEE YOUR DEALER. If kits are not available at dealer, you may order direct from factory adding 50c for postage & handling. Outside U.S.A. add \$1.00. Send for Catalog. 25c.

**SCIENTIFIC MODELS, INC.**  
111 MONROE STREET • NEWARK, N. J. 07105





# jim walker

Manufacturing, Inc.

P. O. BOX 8991 - PORTLAND, OREGON 97208 U.S.A.

This easy to assemble 1/2 "U-Control" trainer is designed to show you what control line flying is all about. Features replaceable balsa wing and tail, and styrene plastic fuselage. Comes complete with handle, line and motor mounting kit - less engine. **No. 301 - Price 4.00**

This unique combination reel and control handle is the mate to the world famous Walker U-Control System. The u-reely is molded in tough, fuel proof styrene. The adjustable brake makes it possible to change your flying radius even during flight. The safety lock prevents accidental slackening in lines and qualifies the u-reely for contest flying. Comes with 70 feet of multi-strand stainless steel cable in either .015 or .018 - your choice.

**No. 915 - Price 9.98**

**No. 918 - Price 9.98**

Site: Club Flying Field. C. Anderson CD, Rt. 2, Tullahoma, Tenn. 37388. Sponsor: Coffee Airfoilers.

July 4-6 - Tulsa, Okla. (AAA) Tulsa Glue Dobber 20th Annual Meet for FF, Ind. CL & RC. Site: TGD Field. W. Salmikov CD, 9906 S. Yale, Tulsa, Okla. 74135. Sponsor: Tulsa Glue Dobbers.

July 5-6 - Frederick, Md. DCRC Mirth of July RC Spec. Events Meet. Rules available from CD on request. Site: Municipal Airport. M. Hill CD, 2001 Norvale Rd., Silver Spring, Md. 20906. Sponsor: DC RC Club.

July 5-6 - San Jose, Calif. (AA) Wavemasters RC Contest. Site: Club Flying Site. R. Morse CD, 3351 Pruneridge, Santa Clara, Calif. 95051. Sponsor: San Jose Wavemasters RC Club.

July 5-6 - Sebring, Fla. (AAA) Confederate Nats for FF & CL. J. Wagner CD, 274 E. 9th St., Hialeah, Fla. 33010.

July 6 - Urbana, Ill. (AA) C-U Aeronauts 7th Annual CL Meet. Site: Illini Airport. J. Fasimpaur CD, 310 E. Benham St., Tolono, Ill. 61880. Sponsor: Champaign-Urbana Aeronauts.

July 6 - Suffield, Conn. (AA) Nor-East Air Races '69 for RC. Site: NCRCC Model Air Park. G. Sawm CD, 6 Audrey Lane, Thompsonville, Conn. 06082. Sponsor: Northern Conn. RC.

July 6 - Queens, N.Y. (AA) Luftmeister Custom Tailored CL Stunt & Flying Scale Meet. Site: Flushing Meadow Park (Pending). P. Bianchini CD, c/o 131-30 223 St., Laurelton, N.Y. 11413.

July 12-13 - Oklahoma City, Okla. (AAA) Sooner State Model Aviation Championships for FF & CL. Site: North Western & Memorial. F. Miller CD, 1900 Rolling Ridge, Bethany, Okla. 73008.

July 12-13 - Summerville, S.C. SC Lowland Fun Fly. Site: CRCS Flying Field. J. Bradham CD, 10 Hawthorne St., Sumter, S.C. 29105. Sponsor: Charleston RC Society.

July 12-13 - Albuquerque, N.M. SWAT FF Qualifying Trials. Site: Boy's Academy. C. Averill CD, 2314 Palomas N.E., Albuquerque, N.M. 87110. Sponsor: South West Aero Team.

July 13 - Richmond, Va. Brainbusters FAI FF Qualifying Trials. Site: Curles Neck Farm. D. Orr CD, 102 Bickfield Dr., Hampton, Va. 23366. Sponsor: Brainbusters.

July 13 - Fountain Valley, Calif. (A) Rubber & Glider FF Meet. Site: Mile Square. G. Wallock CD, 220 LeRoy Ave., Arcadia, Calif. 91006. Sponsor: Thermal Thumbers.

July 13 - Hastings, Minn. (AA) Minneapolis MAC Annual Summer FF Meet. Site: Webers Flying Field. D. Monson CD, 131 W. Wentworth Ave., W. St. Paul, Minn. 55118. Sponsor: Minneapolis Model Aero Club.

July 13 - Hastings, Minn. Mpls. FAI FF Qualifications. Site: Webers Flying Field. D. Monson CD, 131 W. Wentworth Ave., W. St. Paul, Minn. 55118. Sponsor: Minneapolis Model Aero Club.

July 14-20 - Willow Grove, Pa. (AAAA) 1969 National Model Airplane Championships. Site: Naval Air Station. See June issue AAM for event details.

July 19-20 - Tacoma, Wash. (AA) Mount Rainier RC Society WW I Contest. Site: Bethel School Dist. Location. B. Gale CD, 811 9th Ave. S.W., Puyallup, Wash. 98371. Sponsor: Mt. Rainier RC Society.

July 20 - Denver, Colo. (A) MMM Monthly Outdoor FF Meet. Site: Prop Busters Field. D. McGhee CD, 1260 Elm, Denver, Colo. 80220. Sponsor: Magnificent Mountain Men.

July 26-27 - Sunnyvale, Calif. Kosby Memorial Contest. Site: Pioneer Field. J. Sunday CD, 6667 Rainbow Dr., San Jose, Calif. 95129. Sponsor: Pioneer RC Club.

July 26-27 - Tahlequah, Okla. (AA) 2nd Annual Tahlequah Cup RC Races. Site: Municipal Airport. J. Wingo CD, 2615 Elgin, Muskogee, Okla. 74401.

July 27 - Fresno, Calif. (A) Fresno Monthly FF Meet. Site: Near Kerman. F. Gallo CD, 1725 Kenmore Dr. W., Fresno, Calif. 93703. Sponsor: Fresno Gas Model Club.

July 27 - Irving, Tex. FAI FF Qualifying Trials. Site: New S.W. Airport. B. Wilder CD, 2010 Boston, Irving, Tex. 75060. Sponsor: Dallas Cloud Climbers.

July 27 - Chicago, Ill. (AA) 4th Annual Aero Angels Model CL Meet. Site: Irving & Cumberland. A. Hardt CD, 7371 N. Lincoln Ave., Lincolnwood, Ill. 60466. Sponsor: Chicago Aero Angels, Inc.

July 27 - Dayton, Ohio. Midwestern CL Championships & FAI CL Team Selection Meet. Site: Municipal Model Flying Field. C. China CD, 5028 Broughton Pl., Dayton, Ohio 45431. Sponsor: Dayton Buzzin Buzzards.

July 27 - Dayton, Ohio (AA) Midwestern CL Championships. Site: Municipal Model Flying Field. C. China CD, 5028 Broughton Pl., Dayton, Ohio 45431. Sponsor: Dayton Buzzin Buzzards.

July 27-Aug. 2 - Rockford, Ill. EAA Delta Dart Program. Site: Greater Rockford Airport. J. Grega CD, 255 Grand Blvd., Bedford, Ohio 44014.

**TOW MASTER GLIDER WINCH**

\$4.95



PIRELLI RUBBER from \$5.00 ADJ. TOW HOOKS 75c. Precision THRUST BEARINGS \$1.10. Bushings, Hinges, Alum. Bobbins, Hubs, Front End Assemblies \$2.00. DACRON Tow line 90c. Tow Flags, GALAXIE KITS, ZONA SAWS, and many more.

Send 6c stamp for 12 pg. 1969 catalog

**F.A.I. Model Supply**

1112 W. MISSION LANE  
PHOENIX, ARIZONA 85021

## COMANCHE B

## THE ABSOLUTE

## CHAMPION

READY TO FLY R/C PLANE

- MULTI CH.
- SEMI-SYM. FOIL
- 48" WING SPAN
- .15 TO .35 ENGINE
- ALL SURFACES COVERED AND HINGED
- NO PAINTING NECESSARY
- PRE-FORMED AND STEERABLE NOSE GEAR

SPECIFY CHOICE OF MOTOR MOUNT CONFIGURATION VERTICAL, HORIZONTAL, OR INVERTED.

DEALER INQUIRIES INVITED

COMPLETE WITH INSTRUCTIONS  
**\$39.95**

### SKYLANE "44" ARF

READY TO FLY

EASY, UNCOMPLICATED ASSEMBLY. IDEAL FOR BEGINNERS. 50 INSTRUCTIONS. YOU'LL BE AMAZED. ENGINE RANGES FROM .049 TO .15.

**\$21.95**

W/O PANTS

\$24.95 W/PANTS



IDEAL FOR FREE-FLIGHT, SINGLE CHANNEL WITH 0.09 OR .15 ENGINE.

**FREE EXTRA BONUS:** ALL PREPAID ORDERS RECEIVE A DISCOUNT COUPON ON THE FABULOUS QUASAR F&M DIGITAL KIT.

PRODUCT

**60**



SEND CHECK, MONEY ORDER, OR 20% DEPOSIT FOR C.O.D. ADD \$1.50 POSTAGE.

ORDER DIRECT FROM:  
**PRODUCT 60 HOBBIES**

P.O. BOX 19133A, SALT LAKE CITY, UTAH 84119



Span: 65" or 48"  
Area: 630 or 504 sq."  
Sym. 17% airfoil  
For .45 - .60 engines



Aero 600



Flies with 10 channels or proportional rudder, motor, elevator, trim and aileron control.

FLIES COMPLETE AMA PATTERN

49<sup>95</sup>

DART

46<sup>95</sup>



Span: 65"  
Area: 630 sq."  
Sym. 17% airfoil  
For .45 - .60 engines

Designed for the NEW 600 sq. in. PYLON RACING CLASS... with .40 or .45 engine. Flies with reeds or proportional rudder, elevator, ailerons and motor control.

## Check these features...

- Wing and stabilizer are molded foam cores pre-covered with Air-O-Skin. Elevator, rudder and ailerons are balsa pre-covered with Air-O-Skin.
- Fuselage is vacuum-formed Air-O Sheet complete with motor mounts, rubber-band hold-down posts, engine cut-out and dorsal fin.
- Nose and main landing gears are pre-formed.
- Aileron linkage is pre-assembled and ready for installation.
- Models are completely fuel-resistant.
- Damaged parts are replaceable.

## Win Cash and Kits

Lanier is out to prove the contest-winning ability of Lanier models.

You can win cash and kits by helping Lanier prove the contest-winning ability of Lanier models.

All you do is enter the 1969 National R/C Championships or the RCIA Masters competition with a Lanier model... make at least four flights... and you'll win a Lanier kit of your choice. Send us a statement signed by the official scorer and C.O.

If you win 1st, 2nd or 3rd in any of these events you'll be awarded a scholarship to be used by the student of your choice at any college or vocational school.

Class C Expert	Class C Jr./Sr.
1st... \$1000 scholarship	1st... \$100
2nd... 500	2nd... 50
3rd... 100	3rd... 25
Class C Novice	Pylon Formula B
1st... \$250	1st... \$250
2nd... 100	2nd... 100
3rd... 50	3rd... 50

## \*Assemble in 5-12 hrs.

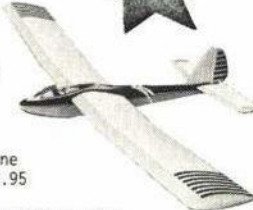
1. Glue pre-cut wing halves together.
2. Mount tail surfaces.
3. Attach control surfaces.
4. Install engine and equipment (not included).

Send ten cents for catalog

# Fly R-C the easy way with Lanier Ready-to-Fly\* models

Eagle 750

19<sup>95</sup>



Condor 1000 Sailplane with 100" Span \$22.95

FEATURES UNCOVERED WING

IDEAL FOR THE R-C BEGINNER

Jubilee!

34<sup>95</sup>



Span: 48"  
Area: 480 sq."  
Clark "Y" airfoil  
For .15 - .19 engines

Flies with motor, rudder and elevator control.

Lanier Industries, Inc.

Briarwood Road  
Oakwood, Georgia 30566  
404/ 532-6401

## Ultimate Models

Continued from page 27

of getting data from a balance, we use as many as 2,500 pressure tubes. These pressure tubes are stainless steel, usually with an inside diameter of .033 inches. These are installed to have the open ends flush with the external surfaces of the model, on wings, fuselage, tail, pylon-nacelle, etc. For example, on a wing, tubes are installed in approximately 15 rows, spaced equally from the wing tip to the center of the model. There are approximately 25 tubes in each row on both upper and lower surfaces.

Tubes will transmit a pressure to a "Scanivalve" unit mounted in the model. These Scanivalves are connected to transducers which change the pressure reading to an electrical impulse, which is read out on electronic equipment. Data from these pressures determine how much force is exerted on each component of the model, as well as its distribution. When plotted this data shows how much load is exerted on each square-inch of wing. This enables designers to know how strong each piece of structure must be. It is an eternal struggle with designers to solve the old strength-to-weight problem. Over the life span of the airplane one pound of weight savings can be worth \$200.00 because of extra payload that can be carried. You can see this is worth nearly its weight in gold. If every component on a plane were made twice as heavy as required, it would be a problem to even takeoff empty of cargo.

**Flutter models:** Flutter models are built more nearly like model airplanes as we commonly know them. Usually, they are constructed of balsa wood and covered with Silkspar. We haven't been able to improve

on the old balsa and paper method where models must be strong, yet light.

Very accurately machined aluminum beams are installed in wing, tail, fuselage, pylon-nacelle, and cargo doors. The wing, fuselage, pylon-nacelle etc. are sliced apart every few inches, leaving only the beams holding everything together. Each section is separated by about a 1/10 in. gap and filled with soft foam rubber so as to not restrict bending. These models are tested in wind tunnels to simulate all possible flight conditions that will be experienced by the big bird.

Movie cameras (128 frames/sec.) are used to record all the deflections the model shows, which can appear startling. For example, the C-5A wing will deflect 17 feet up and 12 feet down, for a total of 29 feet under 100% design load. Airplanes by nature must be elastic to absorb all turbulence experienced and forgive hard landings. The C-5A can carry up to 318,000 pounds of fuel. When the wing tanks are full each wing tip will droop down 38 inches while sitting on the ramp. The wing is built with negative dihedral to allow flight maneuvers to be accomplished with reduced size control surfaces. When takeoff is accomplished the wing lift actually "unbends" the wing to the designed angle of negative dihedral.

Flutter models show up areas that may need, for example, thicker skin or heavier structure to suppress possible flutter tendencies. They also can show the way to reducing unnecessary weight.

**Flow visualization models:** Smoke-tunnel and visual-reference models are usually small and not as complicated as the other models. Their testing is done much more economically, however. By blowing smoke over a model or model component, such as a wing section, at various angles of attack,

visual reference is given to airflow pattern. Air, or any gas sometimes behaves in an unpredictable manner when flowing around a solid object which appears to be streamlined to the eye. Other visual reference can be obtained by utilizing light oil on the surface, which flows in the direction of airflow. Also, tufts may be installed on external surfaces to observe areas of laminar flow, and areas which show separation and need to be cleaned up.

Lockheed at Marietta, Ga. now is operating the largest privately owned wind tunnel of its type in the world. With this tunnel a whole new family of VTOL and STOL airplanes can be investigated. The electric motor generates 9,000 hp and spins a 39-ft.-diameter six-bladed fan. The tunnel is of the single-return type. It has two test sections arranged in tandem. The larger section is 30 feet high, 26 feet wide, and 63 feet long. It is used to test VTOL, STOL, and conventional models at very low speeds, from below 20 knots to 100 knots. This enables good data to be achieved without undesirable flow distortion caused by tunnel walls.

The second test section is 16 feet high, 23 feet wide, and 43 feet long. It will house large models, or even a full-scale JetStar-size wing with flaps and control surfaces. The speed capability here is between 50 and 220 knots. Both these test sections can be utilized with simultaneous testing. Specialized instrumentation and a tremendous air supply are available to enable testing of many different types of models.

Airplanes are constantly changing and improving. On the proposed commercial version of the C-5A, the Lockheed model L-500 will carry up to 844 passengers. This should reduce direct operating cost to the

Continued on page 76





With **HOBBYPOXY** Fluorescent **GLO-PAINT ORANGE**—another "first" from Hobbypoxy—true fluorescent epoxy paint! Formulated just for model use, **GLO-PAINT ORANGE** is a high visibility finish designed to go on over a base coat of white. As with all fluorescent paints, **GLO-PAINT ORANGE** is transparent (it's the only way they can be made).

Just the thing for stripes, wingtips, tail surfaces, or any other spot where you want to know which end is up. Or down. **GLO-PAINT ORANGE** is mixed and applied just like all the Hobbypoxy colors. And, of course, it's hot fuel-proof, non-shrinking, tough, strong, light and easy to use.



Don't forget the other Hobbypoxy colors, the true epoxies made just for modelers.

**WHITE**  
**DARK BLUE**  
**LIGHT BLUE**  
**STINSON GREEN**  
**INT'L. ORANGE**  
**GLOSS HARDENER**  
**SATIN HARDENER**

**BRIGHT RED**  
**DARK RED**  
**BLACK**  
**SILVER**  
**CLEAR**  
**CUB YELLOW**

Buy 'em—Try 'em—Fly 'em! See your local hobby dealer. If he cannot supply you, order direct. Just add 25c to cover handling. New Jersey residents please add 3% sales tax.

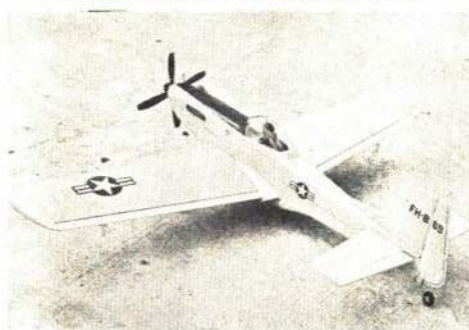
## HOBBYPOXY PRODUCTS

Division Pettit Paint Company, Inc.  
507 Main Street Belleville, New Jersey 07109



## SEMI-SCALE P-51 MUSTANG

DESIGNED TO FLY AMA PATTERN



Span—50"; area—450 sq. in.  
Use engines .29 to .45

Kit contains plastic-covered foam wing with full-length spar and molded fillets and tips. Fuselage, fin and rudder, stabilizer and elevator, exhaust stacks, cowl, canopy and headrest are plastic. Hardware includes: control rods and horns, landing gear, aluminum motor mount, nuts and bolts. Available in silver gray. Or paint it your choice of color. Price—\$46.95.

COMING SOON!

SEMI-SCALE P-40 AMPHIBIAN

BURNS INDUSTRIES Rt. 10, Roper Mountain Road, Greenville, South Carolina 29607

# NEW!

BK has a better way!

CUSTOM FIBERGLASS

## Kwik Fili Mark III

- ★ Lifetime Finish (no painting ever!)
- ★ Radial Mounted Engine
- ★ Removable Cowl
- ★ Moulded Wing Fillet
- ★ Moulded Stab Fillet

\$37.95

\$39.95

Dealer Inquiries Invited



**BK MODEL PRODUCTS**

4765 E. ILIFF DENVER, COLO. 80222

PREMIUM FLAKE COLORS

- Royal Blue
- Bright Red
- Blue Metal
- Deep Gold
- Purple
- Nickel
- Bronze
- Marigold
- Also available: Clear Resin



FOAM WINGS

Standard	\$11.95
Tapered, Strip Ailerons	\$10.95
Landing Gear Kit	
Complete	\$ 3.95

## Model Rocketeer

Continued from page 51

ing—it had no fins and carried 'boulder'-size marble aloft. We later discovered the dart was launched without a straw.

"It did not hit anyone when the ejection charge fired the marble downward at great speed, but a spectator's '69 Javelin suffered a dent. The dart-maker wasted no time disappearing, while we rocketeers faced a not-too-happy car owner. We offered to pay for the damage but the gentleman finally said he would take care of it personally.

"Because of this serious incident and the fact that the wild engine or marble could have hit someone—especially in the eyes—our group immediately set down mandatory safety rules to be followed by all rocketeers, including pre-launch model inspections.

"Please publish this letter for the sake of other rocketeers."

### FIRST PERMANENT RANGE SITE?

(This info. presented by courtesy of *The Tracker*, newsletter of the Southland Assoc. of Rocketry/NAR Section, Los Angeles, Calif.)

Model rocket launchings may soon become legal within the city of Los Angeles. If this does materialize it will be a result of efforts begun in late 1967 to incorporate model rocketry into the aeromodeling activities already taking place at the L.A. Model Airport near Van Nuys.

The prospective site is the Sepulveda Flood Control Basin, used by modelers for the past 20 years. As part of a \$75,000 proposal to the city Parks and Recreation Dept., modelers would have a permanent flying area within L.A.

A \$5,000 model rocket facility would be included in the package to be completed in the next few years. This would be perhaps

the first permanent and locally subsidized model rocket site in the U.S.

Recently, the Southland NAR Section was invited to join in a demonstration of model aviation for the benefit of city officials, to acquaint them with the safety and educational value of model rocketry. Various types of vehicles were flown by our members.

If all goes well, Southland and other active groups in the L.A. area will be able to legally launch model rockets without traveling inconvenient distances to a site. California is finally recognizing the true value of model rocketry. We hope progress will continue towards that end.

(Any other NAR section working on a permanent site?—Author.)

### CSAR IS ACTIVE SECTION IN OHIO

When citizens of Columbus observed Don Eisele Day, several CSAR (Columbus Society for the Advancement of Rocketry) members participated. George Pantalos, CSAR chairman, and member Joe Baxter presented Astronaut Eisele with a club membership and scale model Saturn 1B.

CSAR also announced a Midwest Regional Meet June 28-29 in preparation for NARAM-11. Events are Parachute Duration, Spot Landing, Boost/Glide, PeeWee Payload, Scale Altitude, and Egglofting. Write: 1131 Shanley Dr., Columbus, Ohio, 43229 for info.

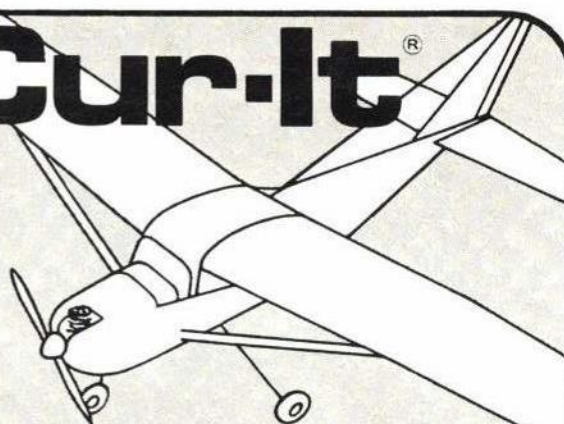
### SHORT BURSTS FROM THE PAD

Bob Mullane, president of NAR's Pascack Valley Section in Harrison, N.J., called attention to a mistake in the Rocketeer column, March '69, when we mentioned NARHAMS' (Lanham, Md.) Jim Barrowman as a PVS member. So the editor hereby agrees to haul all equipment to the NARHAMS range and tear it down after some future launch, to make up any recent loss of section progress. . . . Xaverian High





# Se-Cur-It®



## does it!

New Ambroid Se-Cur-It is the model builders' problem solver. Exceptionally strong and versatile . . . it can be used with hardwoods, styrofoam, plywood, balsa, cloth and paper. Effective with styrofoam . . . use it for gluing spars and balsa covering to wing cores. Hot fuel proof . . . great around motor mounts and sealing this area. For plywood doublers and all joints. Try it today. **Check these features:**

- Hot fuel and high heat resistance
- Excellent tack
- Nonstaining on most woods
- Clear glue line joints
- Long open time — fast setting time
- Sands cleanly without clogging sandpaper.

### AMBROID COMPANY, INC.

305 Franklin Street, Boston, Massachusetts 02110  
Tel: 617 426-9390

### Leaders in Authentic Scale BALSA FLYING MODEL KITS



America's premier line of scale balsa airplanes. Also simple build-by-number kits. Send 10¢ for complete listing.

Priced from \$1.00 up

PAUL K. GUILLOW, INC., WAKEFIELD, MASS. 01880

**Guillow's**

### UNUSUAL BARGAINS BY MAIL

## SHOPPING MART

A selection of products available by mail for readers of AMERICAN AIRCRAFT MODELER. All merchandise sold on a money-back guarantee. Order direct by Stock No. Send check or M. O.

### GIANT FREE CATALOG! 148 — PAGES



#### WORLD'S SMALLEST BIBLE

See entire Holy Bible—all 773,746 words on 1,245 pages—reduced to piece of film 1 1/4" square. Incredible 48,400 to 1 reduction by new photochromic dye, microimage technique that begins where microfilm leaves off. Needs 100X microscope to read. Astound your friends! Carry in your wallet or purse. Project it on wall with scope and prism. Real conversation piece.

Stock No. 41,191KX ..... \$2.00 Ppd.  
50X, 150X, 300X MICROSCOPE  
Stock No. 70,008KX ..... \$16.50 Ppd.



#### NEW SURPLUS Ni-Cd BATTERIES

Save more than 75%! Long life—accept 300 charge and discharge cycles. 1.25 Volts per cell—750 milliampere hours capacity. Excel. charge retention. Hermetically sealed. Indefinite storage life. Multiple cells welded in series—easily cut. Combine to form btry. 1 1/2" dia. x 1 1/4" high. Spec. price for 100 up. Low-cost charger separate.

Order No.	Cell	DC Volts	Price Ppd.
60,634KX	4	5.00	4.80
70,812KX	Trickle Chg. (1-10 cells)		10.95

BIG SAVINGS—QUANTITY ORDERS!  
P-85,184KX 100-999 cells, 70¢ ea. FOB  
P-85,185KX 1,000 up 60¢ ea. FOB



#### "TAKE ME ALONG . . ."

Deluxe, professional vacuum-base vise with universal swivel action. Anchors anywhere on non-porous smooth surface—even upside down. Instant fasten/release lever. Head adjusts 360 horizontal—180° (max.) vertical. Locks securely in any position. Full 3" V-groove iron jaws open smoothly to 3" wide on rugged steel guide rods with precision screw action. Completely stable. 100's of uses. Extremely versatile. Take vise to the work. Cuts costs, too—don't need so many! Blue enamel finish. 6 1/4" high x 6 1/4" wide.

Stock No. 71,144KX ..... \$17.98 Ppd.



#### FLY 9-FT. HOT AIR BALLOON

9-ft. tall. Rises to amazing heights on just hot air. Supplied with tether attached, so can be used over and over. Easy to make, launch, fly. Loads of fun. Great for celebrations, science fairs, plain fun. Will lift model gliders, parachutes, instruments, etc.—anything up to 1/2 lb. Approx. 5-ft. diam. when fully inflated. Kit contains 10 precut red & white gares (No. 1 model paper), 6-ft. 14-gauge wire for bottom ring, top, "tie-off" cord, complete instructions.

Stock No. 60,691KX ..... \$2.00 Ppd.



#### NEW, LOW-COST GEM TUMBLER

Become a rockhound! Fascinating hobby . . . loads of fun, inexpensive, easy. Make jewelry of all kinds—decorative bookends, table tops, etc. Simply tumble-finish readily available gemstones . . . then polish to high lustre . . . brings out beautiful colors. Rugged 3-lb. capacity tumbler w/ continuous duty motor compares to units selling for many times its price.

Stock No. 70,874KX ..... \$10.75 Ppd.  
6-LB. ROCK ASSORTMENT (10 Types)  
Stock No. 70,868KX ..... \$9.00 Ppd.

### GIANT FREE CATALOG

148 Pages! More than 4,000



UNUSUAL BARGAINS!  
Completely new. Packed with huge selections of lenses, prisms, optical instruments, parts and accessories. 100's of charts, illustrations. Many hard-to-get surplus bargains. Enormous variety of telescopes, microscopes, binoculars, magnifiers, photo components, etc. America's #1 source for research labs, engineers, scientists, inventors, experimenters, hobbyists. Write for Free Catalog KX.

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_  
STATE \_\_\_\_\_ ZIP \_\_\_\_\_

ORDER BY STOCK NUMBER • SEND CHECK OR MONEY ORDER • MONEY-BACK GUARANTEE

**EDMUND SCIENTIFIC CO. 300 EDSCORP BUILDING**  
BARRINGTON, NEW JERSEY 08007





That final detail—the needed fire power—to complete your World War I model plane now is available. It's here! The long sought after VICKERS ENGLISH AIRCRAFT MACHINE GUN, found on all allied fighters and reconnaissance planes of World War I, is available at last! This beautiful scale model machine gun is exact in every detail, and is made of durable high-impact styrene. It comes complete with illustrated, easy-to-follow assembly instructions.

See it at your nearest hobby shop.

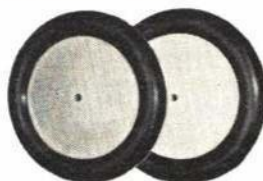
Soon to be available in 1½" and 1" scale.

Later in the year look for other William Bros.' FIRSTS... the Lewis, the Spandau, and the Parabellum Machine Guns.

## AND NEW MINIATURE SCALE WHEELS



SMOOTH  
CONTOUR



VINTAGE  
AIRPLANE

¾" Dia....MS-1 49¢    1¼" Dia....MS-3 69¢    1" Dia....MV-1 59¢    1¼" Dia....MV-2 69¢  
1" Dia....MS-2 59¢    1½" Dia....MS-4 89¢    1½" Dia....MV-3 89¢

Another FIRST! These miniature wheels are designed for small scale models, such as the 1/32 size. Equipped with plastic rubber tires that are unaffected by fuel, these wheels provide longer life and are lighter in weight.

Just the thing for the tail-wheel of your larger models.

SEND 15¢ FOR COMPLETE CATALOG



6719 SALT LAKE — BELL, CALIFORNIA 90201

School Model Rocketry Society's Vol. 1, No. 1 issue *The Xaverian Newsletter* joins the list of section publications launched in January-March. TXN's single sheet format is easily read, neatly done. Kudos to James Bratcher, president of the Brooklyn, N.Y. NAR section, and Ihor Jadlicky, vp, and Richard Malecki, sec. (NAR members note:

It is NAR policy, as with most non-profit organizations, to refrain from publicizing individual model rocket manufacturers, in this space. However, if you need the address of any MR manufacturers, write NAR Hdqrs.) Larry Loos.

### Section Calendar

May 4 & 25; June 1 & 29; and July 13 — Fairchester, Conn. contests.

June 8 — CONN-1 Area Meet (Conn. State NAR members). Events: Scale, Sparrow B/G, Class I P.D., and Open Spot Landing.

June 22 — SPQR-3 Regional Meet (Conn., R.I., Mass., N.Y., N.J. & Pa.). Events: Plastic Model, Super Scale, Scale, Drag Race, Swift B/G, & Class 2 P.D.

July 27 — Regional Meet SPQR-4 (same states). Events: Quadrathlon, R&D. (Note: For CONN-1, SPQR-3 & 4 Meets, contact: G. Harry Stine, Contest Director; 127 Bickford Lane, New Canaan, Conn. 06840).

### Y'ALL COME

#### The Flying Bisons

#### "GREAT LAKES INTERNATIONAL"

R/C contest — June 28-29

All classes, Pattern, Pylon and Scale Paved Runways and All Facilities

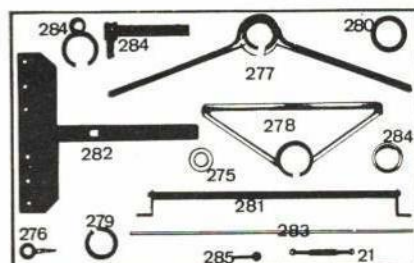
Amherst Airport — Buffalo, N.Y.

INFO: 513 Longmeadow St., Amherst, N.Y. 14226



## DRAGEN

Built for the first time in Sweden in 1929, "Dragon" in 1948 became one of the five Olympic classes. This kit, made in accordance with International Racing Model regulations has planked hull construction and is easy even for beginners. Scale 1:12 it measures 31½" long, with beam 7¼" and is 40" high.



Outline photo of the turned brass fittings.

Kit, complete .....\$28.00

Presented By

**Billing Boats**

"Denmark's Finest Models"

See Your Hobby Dealer

... or send \$1.00 for Colorful Catalog. Dozens of beautiful models; some advertised in recent issues of this magazine. If dealer does not stock, send check or m.o. for direct, prompt shipment. Calif. orders must add 5% sales tax. Satisfaction guaranteed.

**KAYEFF, INC.**

511 Campesina Road  
Arcadia, Calif. 91006

Also Available in Canada  
Through Canadian Hobbycraft

## Atom

Continued from page 23

wing through the slot in the fuselage and check for a free fit. Apply a liberal amount of glue to the area between those two lines and slide the wing into the fuselage until a line appears at each side of the fuselage. With a triangle or carpenter's square, check the leading edge and the bottom wing surface, making sure they are perpendicular to the fuselage. Block the fuselage up with a couple of books so the wing will not touch anything until the glue hardens. The stab can be glued on by laying it flat on a table near the edge. Place a small piece of scrap 1/8" balsa at the edge for a shim. Then invert the fuselage and glue it down on the stab, again checking it is perpendicular. Add the rudder and dorsal fin to complete the basic structure.

Since this plane is a trainer, don't waste



time on a finish. A couple of 4-oz. jars of dope will be sufficient. I used two coats of clear, a coat of sanding sealer (lightly sanded), and two coats of color dope. A small piece of trim and decals complete the job.

Add the hardware. The leadouts can be made from either stranded wire in the Perfect package or solid  $\frac{1}{32}$ " diameter music wire. If stranded wire is used, the looped ends will have to be wrapped and soldered. For the solid wire, merely bend the loop and twist the wire around itself a few turns. This is sufficient. Attach the leadouts to the bellcrank and place the "L" end of the pushrod in the outer hole and bolt on the bellcrank. Fish the leadouts through the holes in the wing tip guide and then make the outer loops.

The control horn is installed on the underside of the elevator. A nylon horn with a backup plate should be used. Tighten the screws up sufficiently to bring the plates snug against the wood. Avoid over-tightening; it will compress the wood. Add a dab of glue to the ends of the screws to keep them from working loose. A plastic pushrod keeper is the best means of retaining the pushrod on the horn. This also will allow for the easy adjustment of control later on. For the first flights, the pushrod should be placed in the outer hole.

The landing gear is made from a piece of  $\frac{3}{32}$ " diameter music wire. This can be bent fairly easily to the shapes on the plan with a little muscle-power and a good set of pliers. Either metal or nylon clips can be used to fasten the wire to the fuselage. The wheels are held on by using either wheel collars, or by soldering small washers. The fuel tank retainers are made from left over leadout wire. Bend these to a "C" shape and insert through the fuselage, then bend up the tabs on the other side. The fuel tank is fastened on by small rubber bands. Place a small piece of cloth or foam rubber under the tank to absorb shock. Bolt on the engine and construction is complete.

**Flying:** The advice presented in the "Small Fry" article applies to this trainer. The best advice is to seek the help of an experienced modeler. If possible, join one of the many clubs throughout the country. If you choose to go it alone, you should expect problems on your first few flights. It is important not to be discouraged if you have a couple of mishaps on your first attempts.

The first thing to do before even going to the flying field is to "break-in" your engine. You must know how to run and start your engine before flying is attempted. Use an engine test-stand or your plane for this break-in period. Fill the tank, then turn the needle valve in all the way till it stops. Then open the needle valve six turns and squirt a couple of drops of fuel into the exhaust. Turn the propeller over a couple of times and then connect the battery and flip the prop smartly. If the engine fires and stops, repeat the priming in the exhaust and flip again until the engine starts and continues running. The engine should be running extremely rich at this point. If it bogs down and stops, turn the needle valve in a turn and restart. Adjust the engine to run steady and rich when the battery clip is removed, and run at least a quart of fuel through it for the break-in. During this "home" break-in period you can learn how to start and adjust your engine.

For the first flights, pick a day when there are not gale-force winds blowing; but there does not have to be a dead calm either. The addition of small ailerons will aid in flying in windy weather. Glue on small pieces (1 x 3") of  $\frac{1}{8}$ " balsa at the ends of the trailing edges. Glue the aileron on the right wing  $\frac{1}{4}$ " up and the left wing  $\frac{1}{4}$ " down.

# WHAT'S UP?...

## HAWK's HIGH-FLYING

### $\frac{1}{4}$ " SCALE PLATED MODELS



#### "Plated" Republic F-84-G THUNDERJET

Famous Korean War fighter that made the Impossible Mission possible. Flown extensively by NATO forces, the F-84 was the first U.S. Air Force Tactical Fighter designed to carry an atomic weapon. Gleaming of chrome and authentic excitement.



No. 219-200 **\$2.00**



#### "Plated" CESSNA SUPER SKYMASTER

This unique 5-passenger commuter plane with interior control wheels, instrument panel, seats; exterior tricycle landing gear and push-pull turn engine. Have tomorrow's aircraft today...



No. 217-200 **\$2.00**



#### "Plated" RUSSIAN FIGHTER MIG-15

The first swept-wing combat jet to be placed in quantity production. The MIG-15 for the Red Chinese Air Force or the Russian Aerobatic Team. It's aero-customized with markings for either type aircraft.



No. 218-200 **\$2.00**

#### \* Authenti-Plate

textured aluminum on plastic and only Hawk has it!  
And Hawk has eleven plated models with exclusive Authenti-Plate.

Hawk's new Model Display Cases are available at dealers now!



**HAWK MODEL COMPANY**

CHICAGO, ILL. 60656

The most trusted name in modeling — We prove it... Kit after kit after kit after



Your engine will only run at **PEAK PERFORMANCE** when you use the **FINEST FUEL...** and there's none better than **SUPERSONIC\*!!**

There is a **SUPERSONIC FUEL** for EVERY TYPE OF FLYING so...

# FILL'ER UP



## Or... SUPERSONIC 1000\*

Top performance. Year around maximum dependability. For all 1/2A miniature engines. Speed-Team Racing. \*New Improved Formula

1/2 Pt. ....	75¢
Pt. ....	\$1.25
Qt. ....	\$2.25

## with... SUPERSONIC 100

General purpose fuel for Free Flight, U-Control, and Radio Control.

1/2 Pt. ....	65¢
Pt. ....	95¢
Qt. ....	\$1.65
Gal. ....	\$5.95



## Or... SUPERSONIC HI-LO

A special formula to meet the demand for Radio Control, U-control, Stunt, and where both high, low engine speeds are required.

Gal. ....	\$6.25
-----------	--------



## Or... SUPERSONIC SPEED FUEL

The top rated formula for speed flying. Designed for those who want to win!

Pt. ....	\$1.95
----------	--------



### \*FACT:

More **SUPERSONIC FUEL** is used by model flyers than any other 2 fuels together!



**K & B MANUFACTURING**  
DIVISION OF AURORA PLASTICS CORP.  
DOWNEY CALIFORNIA

## NEW!

### From Rocket City R/C Specialties

We are bringing out a new fuel tubing that we believe has all of the qualities the modeler desires.

- =1—Tubing is crystal clear. Lets you immediately see fuel draw when starting engine.
  - =2—More flexible than other plastic tubing.
  - =3—Extremely tough. Can be handled with forceps or needle nose pliers without worry or injury to tubing.
  - =4—Will not deteriorate such as latex surgical tubing.
  - =5—Will not harden with age as other plastic tubing does.
  - =6—Will stay flexible in 0 degree weather. Just the thing for you fellows in the north.
  - =7—Will fit from a 19 to the largest engine.
  - =8—Tubing size is 3/32" x 3/16" O.D. This tubing will be available at your dealers on 30 foot spools—the price will be 30¢ per foot.
- Mr. Dealer, please order this item from your distributor.
- Modelers, please **DO NOT** order direct unless you want a 30 foot spool.

## ROCKET CITY R/C SPECIALTIES

1901 Polk Drive N. E.  
Huntsville, Ala. 35801

Take off on the down-wind side of the circle and avoid giving too much control to the airplane. For the first few flights, concentrate on just keeping the plane level about 10 ft. off the ground. After you have mastered level flight, you can progress to the basic control-line flight maneuvers—the inside and outside loops and inverted flight. You are now on your way to becoming an accomplished pilot!

## Miracle at Le Mans

Continued from page 18

from the front horizontal elevators to the vertical rudders in the tail, which the frame supported. Skids beneath the front elevators served as the landing gear.

Next to the engine, along the leading edge of the lower wing, was a small bench-like seat. There was just room for the pilot and a passenger. For show, the Wrights had upholstered the seat with vermillion velvet. French aviators jokingly referred to it as "la amour setee."

The controls consisted of two vertical levers and a rudder bar. In this respect, the machine differed greatly from the Kitty Hawk airplane, because the operator could sit upright, instead of lying in a prone position on the wing. The plane weighed about 1200 pounds.

It was a strange, completely new "vessel of the air" as far as the observers were concerned, even to those who had seen the French machines, and to the French flyers themselves. They could not get used to its having no wheels. The twin-screw arrangement was a novelty. Yet, somehow, it looked more practical, more like a real flying machine than did the other designs. Even Farman admitted this.

## PAPER MODELS



Shipping \$.25-Calif. 5% S.Tax - Catalog \$.20 (free with order)

**John Hathaway** 112 W 7th St #216  
San Pedro, Calif. 90731



25' LONG - LESS THAN 2 LBS.  
FOR .15-.29 SIZE ENGINES

**SPECIAL INTRODUCTORY PRICE-**  
hull & deck joined - only \$26.00

## G.E.M. MODELS

P.O. BOX 342-DEPT. A-M  
BROADVIEW, ILL. 60153  
PHONE 312/279-2451

COMPLETE CATALOG 50¢. Please give zip code with all inquiries and orders

There was one observer, however, who didn't think so. Oddly, he was M. Ernest Archdeacon, the wealthy sportsman, who had put up part of the 50,000-franc prize for the first 500-meter flight won by Henri Farman the past January. Archdeacon, who fancied himself a real authority on aeronautics—and perhaps he was, for the period—entertained a group of people in the grandstand including some reporters with loud, derogatory remarks about the Wright machine.

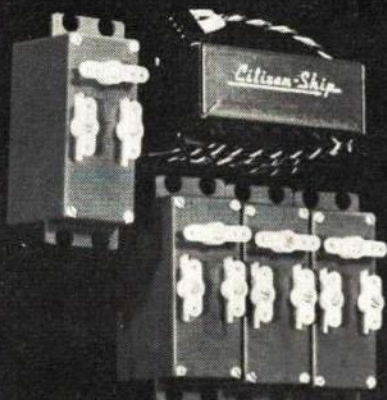
"It is simply designed all wrong," he declared. "Positively, the thing will never fly!"

He was explaining why, when suddenly there was a strange hush that came over the crowd, a stillness of anticipation. Wilbur, dressed casually in a gray suit and wearing only a cap with a visor pulled down low over his face to keep out the sun, and a pair of goggles, was climbing into the machine and testing its controls. The wind had died down. The big moment had arrived.

It was 3:10 p.m., Saturday, Aug. 8, 1908, a day to remember. With Wilbur at the controls, the French mechanic and Fleury, M. Bollee's chauffeur, each taking hold of one of the big blades gave it a downward pull and the props started spinning faster and faster, fanning up a man-made hurricane. The engine spat and sputtered and coughed, but finally burst out with a throaty roar.

Wilbur seemed satisfied, adjusted the goggles and his cap. Then he gave a wave of his hand to the crowd. The next instant he tripped the trigger which released the weight in the tower. When the weight dropped, the plane moved forward along the track with Fleury holding onto one wing to help keep it level. After running alongside for about 40 feet he could not





# NEW

## NEW PRECISE CONTROL

New enclosed sticks, new vinyl clad case, new smooth operation. Continuing performance, availability, service.

Components available individually.

**Citizen-Ship**

RADIO CORPORATION DEPT. W  
810 E. 64 ST., INDIANAPOLIS, INDIANA 46220

6 CHANNEL 72MHZ AND 6 METER—\$424.95

4 CHANNEL 72MHZ AND 6 METER—\$399.95

6 CHANNEL 27MHZ—\$399.95

4 CHANNEL 27MHZ—\$374.95

WRITE FOR FREE BROCHURE



keep up with it and let go. The machine began to lift itself free before it came to the end of the monorail. In the next second it was climbing gracefully like a giant bird. It continued to elevate steadily until it had reached an altitude of about 35 feet. Then, it leveled off and flew straight and level away from the crowd, heading for the trees at the far end of the race course.

The crowd was stunned, silent with awed fascination, too flabbergasted to cheer. There was a great gasp as the machine seemed inevitably to be heading for a crash into the tall trees. But Wilbur banked sharply and the man-made bird made a quick turn, headed back in level flight, roaring past the grandstand at a speed of about 35 miles per hour. At the other end of the oval it made another 180-degree turn, came back directly over the heads of the spectators this time. Twice it circled the track. Then, with the sureness and the smoothness of a great gull it glided down to a perfect landing right in front of the grandstand.

The flight lasted one minute and 45 seconds. But in that minute and a fraction, history was made. The crowd went wild.

Spectators surged forward, mobbed Wilbur, trying to give him the French accolade by kissing him on the cheeks. M. Bollee and M. Berg, who were first to reach him, and the gendarmes were swallowed up in the wave and frenzy.

Heartiest and warmest congratulations of all came from the French aviators.

"Cet homme a conquis l'air!" shouted Delagrang, who was almost crazy with excitement, jumping up and down. "Il ne'est pas bluffeur!"

"The man has conquered the air! He is not a bluffer!" he shouted again and again. The crowd began to chant the words.

Bleroit rushed out and hugged Wilbur. There were tears in his eyes when he said "C'est bien, ce grande, manifique! The machine is in every respect superior to any of ours. A miracle."

Later, in the shed, when they were putting the plane away, Henri Farman approached Wilbur, in confidence, and asked when he could buy a machine from the Wrights. He didn't mention the \$5,000 challenge or the flying contest.

The next morning, Paris newspapers in screaming headlines proclaimed: "The MIRACLE AT LE MANS!"

M. Henri Deutsch de la Meurthe, the multi-millionaire oilman, who had been holding out with the syndicate, telegraphed he would take 100,000 francs in stock. There was no trouble now forming *Le Compagnie Generale de Navigation Aerienne*. The only question was: how soon could they start building Wright airplanes?

Wilbur, despite wild celebrations and parties which were held after the flight, spent the night in the shed and "slept like a baby next to the miracle machine," according to *Le Journal*. The next day, Sunday, he attended church and spent the afternoon with the Bergrs. The Wrights never flew on the Sabbath. But bright and early Monday morning, he was making preparations for another flight. He wanted to get in as much practice as possible. That day he made two flights. As an added thrill, he did a figure eight for the crowd. And he made three complete circles of the field!

The next day, August 11, he was in the air for three minutes and 43 seconds, and he increased the altitude to above 50 feet. On the 12th, he doubled the altitude again and stayed aloft for more than six minutes.

Thursday, the 13th, his luck ran out. But not before he made seven wide and graceful

### GET TOP PERFORMANCE!

USE

## VIBRA-TAK

Slide Rule Tach.

Check the RPM's of your motor accurately. Instantly know what peak your motor is operating . . . get top efficiency and smooth running power. Engineer proven, VIBRA-TAK is a professional instrument built of polished, high stress aluminum. Carry it in your pocket or toolbox.



including carrying case

Dealer inquiries invited

Order from:  
**VERDELL INSTRUMENT SALES CO.**  
P.O. BOX 212, EL CAJON, CALIF. 92020

- CHECKS MOTOR SPEEDS
- INTERNAL COMBUSTION ENGINES
- ROTATING & VIBRATION EQUIP.
- GIVES DIRECT READINGS FROM 2000 TO 21000

Think safety belts  
are confining?

Not half as confining  
as wheelchairs.

What's your excuse?

Advertising contributed  
for the public good.





figure eights, which newspapers later acclaimed as the "greatest aerial spectacle ever seen." He was about to make another "eight" when something happened.

The plane was flying at about 75 feet high. He was affecting a sweeping bank when, suddenly, the right wing began to speed up in its tilt and the craft began a slow cart-wheel. He tried desperately to correct it, but before he could level off completely, the other wing tip dug into the ground and the plane ground-looped to a jarring stop. The left wing was completely demolished. Fortunately, he walked away from the crash without a scratch. But it took a week to make the necessary repairs.

During the period the plane was being repaired, Wilbur received word from the French Military authorities that they would be honored to have him use the more desirable field at Auvours. The artillery tests were *finis*. Wilbur was equally delighted. In fact, the shed at Hunaudieres was torn down and reconstructed overnight at the new location.

The plane was placed on an improvised two-wheeled trailer and towed to the new location behind Leon Bollee's automobile. Since the two fields were only about ten miles apart, Wilbur could easily have flown the machine from Hunaudieres to Auvours. He decided against it until he had a chance to familiarize himself more with the controls. Within a few days, he was flying much greater distances as a matter of routine.

He flew for the first time at Auvours just before dusk in the evening of September 4th. The wind, he recorded, was like "a sea breeze, blowing at about six meters per second," and the machine behaved beautifully. The next morning he flew for 19 minutes, 48 seconds, the longest flight yet, and the flight was made in a ten-mile-an-

hour wind with perfect control and stability. He also attained a speed of almost 40 miles per hour which was the fastest he had flown so far. In landing, he made the same mistake he had made in the fatal turn on the 13th at Hunaudieres. But this time he corrected it in time and although the landing was fast and extremely rough, the plane suffered only a broken skid.

That night, he was overjoyed when M. Berg called to tell him a cable from America said Orville Wright had flown successfully at Fort Myer, Virginia where he was demonstrating another machine for the U.S. Army. Orville, Berg said, was the hero of the hour. America was waking up. The airplane was front-page news across the U.S.

Wilbur, of course, was the most popular figure in France. Everywhere he went people cheered and mobbed him for his autograph. Every word he said was quoted in the newspapers. He was guest of honor at dinners and banquets which somehow he managed to squeeze in, between flights. Indeed, he had won the hearts of all Frenchmen.

## Ultimate Models

*Continued from page 69*

neighborhood of one-half cent per passenger mile. This will enable lowering of air fares and make flying much more attractive for our ever increasing world population.

About the author: George Perryman has been a model aircraft builder and a competition flyer for nearly 30 years. He captained the U.S. Wakefield team to the 1951 Internationals in Finland, and was a member of the A/2 Nordic teams to Yugoslavia in 1953 and to Denmark in 1954.

Two sons, Steve and Greg, are also active in model competition and have flown several Nats events. Their trophy total is near the 100 mark!

## Rivets

*Continued from page 19*

Fin area was reduced, stab area enlarged, CG moved forward and VOILA! the aerodynamic problem was identified and solved. Careful inspection showed it to be a binding linkage at the actuator! In such ways are we humbled. Embarrassing as the experience was, it is mentioned only to serve as a reminder that attention to "obvious" details can and do spell the difference between success and failure.

Now a word here about the guidance system. As space and weight are limited, a small package is a definite must and the Adams Baby Actuator is coupled with Ace Radio Control's Commander DE superhet receiver which is designed for actuator use with the "add-on-switcher" built into the circuit. The small size and weight plus excellent range and sensitivity make this a winning pulse proportional combo at a bargain price. Two 225 mah nickel-cadmium button cells and a small switch complete the works at an all up weight of about 2½ ounces.

Any rudder only or Galloping Ghost pulse transmitter will handle the remote controlling. Just be sure to follow actuator instructions with care—no binding linkages for instance. Also, no pushrods here—torque rod only and please keep the battery voltage at 2.4V. for the whole works. The actuator can be mounted on a ¼" ply slide for quick removal.

Trim and Flying: It is important to re-

## Interested in Control-Line?

**START OFF with Howard Mottin's**

**"GETTING STARTED IN CONTROL-LINE."**

It's Vol. II in AAM's library series for the novice and the expert. Chapters cover all aspects of C/L—where to start, how to build, trim and fly plus a thorough review of competition events. \$1.25 ppd. Use the coupon below.

## WIN WITH WARNER

**NOW AT NEW LOW PRICES**

### NEW ITEMS

#### \$1.25 FIBERGLASS CLOTH

2.5 oz. per sq. yd. 28" x 38", .004" thick

#### \$1.85 FIBERGLASS TAPE

6 oz. per sq. yd.  
6" wide x 60" long. .007" thick

### NEW WINGS

\$6.45 RCM Trainer \$6.45 Super RCM Trainer  
\$8.45 Professor

**SEE THEM AT YOUR DEALER'S TODAY**

**Cores come ready to be covered.**

**Including:**

Precut dihedral angles • Bellcrank or Servo cut-outs • Landing gear cut-outs and mounts where applicable • Control line wings drilled for lead-out; no breaks in surface • Fiberglass reinforcing cloth • Instructions.

#### Control Line

\$6.45 Magician \$7.45 Nobler  
6.45 Ringmaster 7.45 Skylark

#### Radio Control

\$6.45 Tauri \$8.95 Patriot II  
6.45 Tri Squire 8.95 Zeus Mark IV  
6.95 Falcon 56 9.45 Beachcomber  
6.95 Sky Squire 9.95 Cherokee  
7.45 Instructor 9.95 Regular Taurus  
7.45 Jenny 9.95 Swept Taurus  
8.45 P-Shooter 10.45 Kwik Fil II  
8.45 Sr. Falcon 11.45 Candy  
8.95 Aristo-Cat

**Wholesaler and dealer inquiries invited.**

**warner industries, inc.**



**259 hosack st.**

**columbus, ohio 43207**

**AMERICAN AIRCRAFT MODELER**  
733 Fifteenth Street, N.W., Washington, D. C. 20005

I've enclosed \$..... for ..... copy(s) of Mottin's GETTING STARTED IN CONTROL-LINE.

RUSH TO .....

ADDRESS .....

CITY .....

STATE .....

ZIP .....

Note: The \$1.25 price applies only to U. S. and Canadian orders (APO's and FPO's too). Add 25c for handling and delivery to foreign countries.



## ELECTRONIC WAR SURPLUS

### NT-6 WILLARD 6-VOLT STORAGE BATTERY



Rated 2.4 amp hr.  
Approx. dimensions:  
3 1/2" l. x 1 3/4" w. x 2 1/4" h.  
Weight: 1 lb.  
3 oz. (plastic case) Dry  
charged.

PRICE \$2.50 each

### R/C SERVO MOTOR DRIVE ACTUATOR



contains  
2.6 volt permanent  
magnet motors.  
Current consumption  
approx. 100 MA.  
2.6 volt DPDT Relays  
Many Gears

Unit completely enclosed in aluminum housing.

PRICE \$4.00 each

### NICKEL CADMIUM BATTERY 1.2 VOLTS



rechargeable thousands of times  
... alkaline storage battery sintered-plate ... flat voltage curve during discharge ... will hold charge for long period of time ... high discharge rate up to 50 amps ... spill-proof ... may be used in any position ... approx. 6 ampere hour capacity ... dimensions: 6" high; 2" wide; 1/2" thick ... Approx. wt.: 6 oz. uses potassium hydroxide (30% Electrolyte).

PRICE \$2.50 each, postpaid

Approx. 10 amperehour capacity dim.: 4 1/2" high, 2 3/4" wide, 3/4" thick, approx. wt.: 9 oz. \$3.50 postpaid

## C & H SALES CO.

2176 East Colorado Street • Phone: 681-4925  
Pasadena, California 91107

## HOBBY HELPERS FULL SIZE PLANS

### Group Plan #463 4 oz. 85c

Heinkel He-51 control line scaler by Walt Musciano. For .35-size engine; spans 36"; 28" long. Fighter biplane fought in Spanish Civil War.

Scale-like Stunt Curtiss U-control by Charles Parrott based on fabulous P-40 has actually won scale recognition! Tremendous contest flyer; spans 52"; 39" long; takes .35 disp. motor.

### Group Plan #563 3 oz. 60c

"Woodpecker" aerobatic U-control stunt by Frank Warburton, England's stunt champion. Scale-like 58" span beauty based on Italian Procoer "Picchio"; length 40"; .40-size engine.

"Turkey Buzzard" remarkable free-flight tailless design by Roy Clough Jr. Spans 32"; 14" long; for .020 motor.

### Group Plan #1164 4 oz. 85 cents

Wild Duce — Twin engine, single channel, rudder only radioplane by Ed Simpson; spans 50"; 31" long; takes two .049-size powerplants.

### Group Plan #360 3 oz. 60c

"Shoo-Fly" shoulder-wing radio control plane by Aubrey Kockman spans 43 inches, is 30" overall. Takes .09 or smaller engine. Extremely rugged; looks like Goodyear racer.

Fokker Dr. I Triplane as flown by Lt. Werner Voss in World War One. Control-line craft by Walt Musciano spans 24"; is 19" long; takes .09 to .23 power plant.

For Special Handling of Plans only 6¢ per oz. 1st Class 10¢ per oz. AirMail Latest Catalog send 15¢ to cover handling United States and Possessions only

## HOBBY HELPERS

1543 STILLWELL AVE. • BRONX, N.Y. 10461



# NINE LIVES

## Build it yourself—Revell's Model-of-the-Month for June, the F4F-4 Wildcat.

In the early days of World War II, the stubby-nosed Wildcat was a born fighter, but vastly outnumbered by the Japanese fighters. Ah, but the Japanese reckoned without one Lt. Cmdr. James Thach, Wildcat ace and now an admiral, who invented the intricate "Thach

Weave." When counterattacked, the Wildcats wove back and forth to protect each other from rear attacks. This maneuver gave many Wildcats nine lives.

With a 13 1/4" wingspread, folding wings and authentic cockpit, your 1/32-scale Revell model is a true Wildcat in every detail. It's a joy to build, and looks great in a den. Sells for \$2, wherever toys or hobbies are sold. Send 35c for color catalog of new kits. Revell, Inc., 4263 Glencoe Ave., Venice, California 90291.



## AMA'S CHARTERED CLUB PROGRAM PROTECTS YOU



NEW!

FROM

STINGER MFG. CORP.  
2331 WEST HOLLY STREET  
PHOENIX, ARIZONA 85009

TED WHITE'S

EL GRINGO

& EL GRINGO TOO

KIT CONTAINS: Fully assembled molded fiberglass fuselage... with bulkheads installed and drilled where needed. Complete set of pre-cut and sanded to shape wing ribs, alignment rod holes pre-drilled for easy assembly. Complete set of easy-to-read construction and assembly plans. Complete list of building materials and accessories, so you the modeler can select the wood of your choice. Dealer Inquiries Invited.

Sold in EL GRINGO - Wing Span: 70" - Suggested Eng.: .49 to .71 \$46.95  
semi-kit form EL GRINGO TOO - Wing Span: 54" - Suggested Eng.: .35 to .45 \$34.95



## Tatone "PEACE PIPE" MUFFLERS

New!

STANDARD  
\$4.95

EXTENDED  
\$5.95

The Tatone Peace Pipe reduces noise with a minimum of power loss. Made in three sizes, they will fit any present day engine, .09 to .65 without any modification. Use one muffler for many engines. Angled to keep fuselage cleaner, easy to attach.

This new Peace Pipe was extended to provide 1" of clearance between the exhaust stack and muffler. Designed to fit most wide fuselages and cowlings.

### SIZES:

No. 101 (No. 101-19)  
No. 102 (No. 102-40)  
No. 103 (No. 103-65)

If no dealer is convenient, order direct. Add 25c for handling. Foreign add 15%. Send 25c for ILLUSTRATED CATALOG

### SIZES:

No. 101 L (No. 101-19)  
No. 102 L (No. 102-40)  
No. 103 L (No. 103-65)

TATONE PRODUCTS

Dept. AA-4

4719 Mission St., San Francisco, Calif. 94112

NEW FUEL TUBING 49c FOR A 2-FT. PACKAGE.  
WILL NOT GET HARD OR SPLIT.

## B.K. has a Better way

Solid Plastic  
Bearing Block →

Positive Locking  
Tiller Bar ↗  
(outlasts others)

3 wires encased ↗  
in a seamless steel  
tube assures longer  
wear and the ut-  
most strength

**\$6.95**

Nickel Plated

BK — No. 150

Steerable Nose Gear

NOW! A steerable nose gear that can take it!  
Designed to meet the needs of the most demand-  
ing flyer.

- Heat Treated Dual Coil Springs.
- $\frac{3}{4}$  Spring Wire withstands severe landing shocks.
- Positive Locking Hub eliminates nose wheel wandering.
- Adjustable wheel size.
- Accommodates W.A.G. Electric Brake and Hub and the new Du-Bro Friction Brake.
- No side sway.
- Adjustable height.



MODEL PRODUCTS

4765 E. ILLIFF DENVER, COLO.

## SCALE R/C

PLAN KITS

RC scale projects for the accom-  
plished builder. Formed canopies and  
bladders, formed gear struts, plans, parts  
sheets and construction manuals are included.



### A-30 BALTIMORE

**\$9.95**

SPAN/AREA.....70"/670 SQ."  
WEIGHT.....7-9 LBS.  
ENGINE.....19-40  
FORMED COWLS, EA.....\$3.95



### F4F WILDCAT

**\$9.95**

SPAN/AREA.....57"/550 SQ."  
WEIGHT.....5.5-6.5 LBS.  
ENGINE.....40-60  
FORMED COWL.....\$4.95

# WING

WING MFG

P.O. BOX 265

ELMWOOD PARK, ILL. 60635

SEND 25 CENTS FOR LITERATURE

PROFILE PUBLICATIONS — for the interested  
scale modeler.

COUGAR — UEDA ENGINES — for the dis-  
criminating flyer.

Dealers and Wholesalers inquiries invited.

MAIL ORDERS try your AHM Dealer first. If he  
cannot supply items, send his name and address  
with your order. On orders under \$3.00 add 50¢  
handling charge.

Associated Hobby Manufacturers, Inc.  
3202 N. Boudinot St., Phila., Pa. 19134



## IN CANADA

ACADEMY PRODUCTS



EVERYTHING FOR THE MODELER

Modelers:

Write for an  
ACADEMY CATALOGUE.  
60 cents, Postage free.

Canadian Dealer  
Inquiries  
Invited.

Wholesale only.

ACADEMY PRODUCTS LIMITED

108 Tycos Drive, Toronto, 19, Ont. CANADA

member that all small airplanes are subject  
to scale effect. To simplify, this means that  
wing loadings of 10-15 ounces per square  
foot on a wee-one are the equivalent of a  
20-30 oz. loading on a five or six foot model.  
The exact ratio is not important here but  
the principle is. With limited area a wing  
must fly faster to create lift, with the result  
that there is less speed spread between  
power on and power off. Because of this,  
trim and balance are more critical. The  
little ones are less forgiving. Rivets is no  
exception.

You will find that  $\frac{1}{32}$ " of stabilizer trim  
has a positive effect on performance and  
small changes of the CG or balance point  
do likewise. Regarding the latter — because  
of the wing taper, the CG as shown on the  
plans must be measured balancing the  
plane at the wing roots — not the tips. It's  
easier to measure with the ship held upside  
down. A forward CG will give you a more  
stable tracking flight with less noticeable  
stabilizer trim effect — while a forward CG  
will produce an opposite effect. The force  
arrangement shown on the plans gives a fast  
grooving flight but not for loops — be sure  
you have plenty of altitude before holding  
the nose down, for recovery takes lots of  
air space. A final comment on landings. Set  
up the approach and leave it alone! Major  
last minute corrections will only dump lift  
and the plane as well. As mentioned, when  
properly trimmed, the glide is fast and flat  
— if you don't disturb it.

While the foregoing comments may seem  
on the negative side, they are not intended  
as such. A scale racer such as Rivets has  
been designed to do certain things well at  
the expense of some limitations which  
should be respected. This is just common  
sense. A trainer it is not. An exciting  
performer it is. To put it another way —

Newest field-tested high-quality  
R/C accessory by **DU-BRO**  
strip aileron  
linkage hook-up

Complete...  
fully adjustable...  
can be used on  
any high, mid or  
low wing plane.

NO  
NOISE!

22 PIECE SET  
**\$2.95**

Cat. No. AL-295

**DU-BRO PRODUCTS, Inc.**  
480 Bonner Road  
Wauconda, Illinois 60048





# WE HAVE MOST EVERYTHING



## NICKLE-CADS

#2 CELL	#3 CELL	KOH PELLETS
#2—4 Amp Cell .....		1.95
#3—7 Amp Cell .....		4.50
KOH Pellets .....		.50

## COX THERMAL HOPPER

.049 ..... 6.95



\$13.95

## ACE H-D CHARGER IDEAL FOR #2 OR #3 NICKLE-CAD CELLS

12" Folding Prop .....	2.00
Chrome Mylar Sheet .....	.35
1/10 Second Stop Watch .....	18.50
Cleveland 36" Black Widow .....	3.00
Dyna Jet Engine .....	49.50
Tatone U-Control Handle .....	1.75
Profile Publications .....	Ea. .50
World Engines Catalog .....	.75
Unimat Lathe, F.O.B. ....	139.50

WE HAVE IGNITION ENGINE PARTS  
☐ SEND FOR FREE LIST



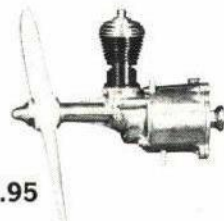
## STARTING CELL

#3 CELL \$4.95

#3 Nickle-Cad Cell with Glo  
Plug Clip ..... 4.95  
\$5.55 Value

## COX SPACE BUG

.049 ..... 6.95



## WANTED

We buy and trade used engines  
and RC gear. Send us a list today  
of what you have.

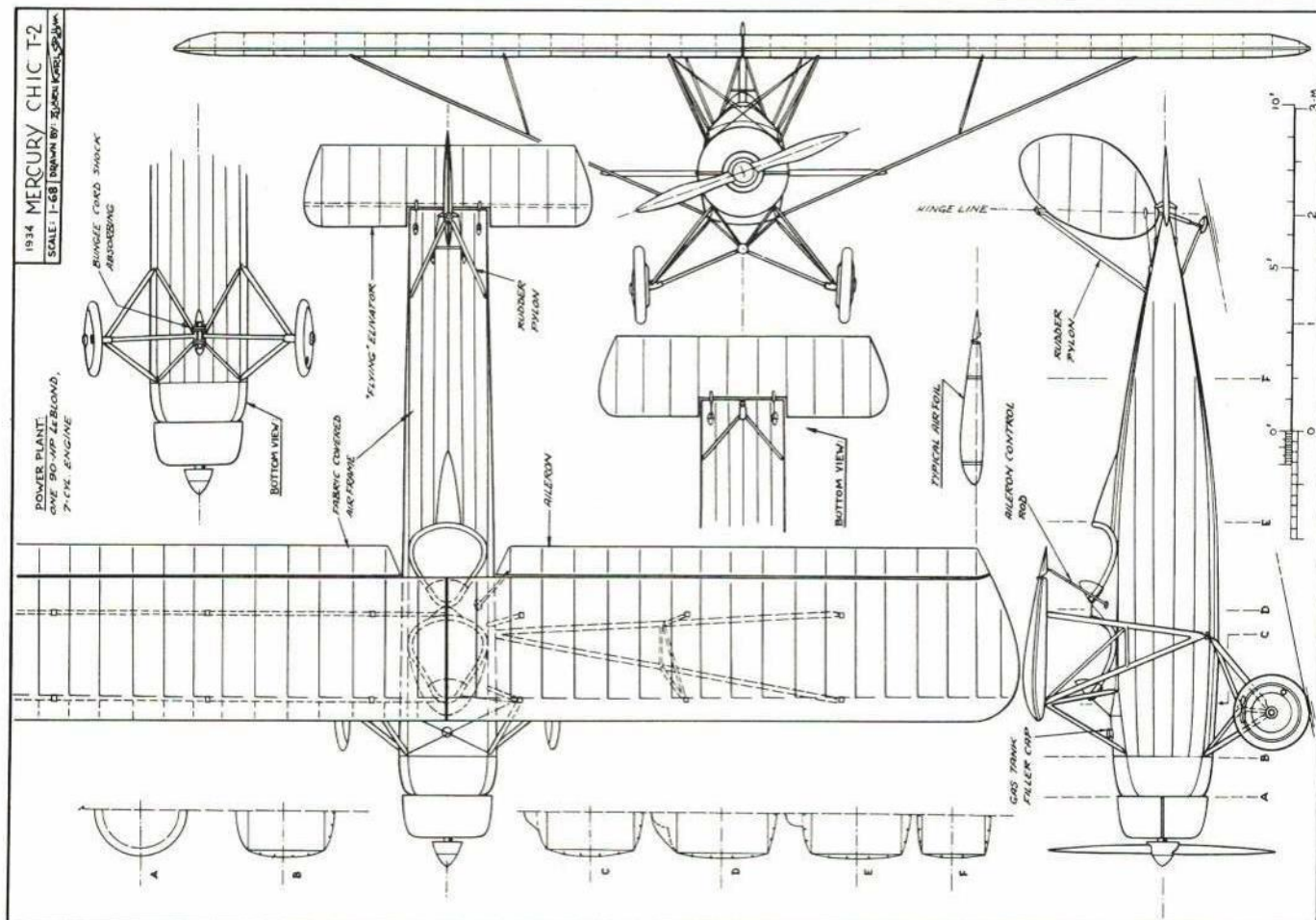
## Stanton Hobby Shop Inc.

4734 North Milwaukee Avenue  
Chicago, Illinois 60630  
Telephone 545-8185 area code 312

## STANTON SPECIALS

HUNDREDS OF CLOSE-OUTS  
& USED ITEMS

SEND 10¢ FOR SPECIALS CATALOG





THIS CAN BE YOU



## IN YOUR OWN ONE-MAN BENSEN GYROGLIDER

So stable it flies hands off!

Enjoy the thrill of really flying in the craft you build—advance to this full-scale, man carrying whirlybird. The only homebuilt ever to win 12 official aviation World Records, all sanctioned by NAA and FAI. Fun to build with ordinary hobbyshop tools at no more cost than a U-control job. Simplest and safest aircraft to fly. Wheels interchangeable with floats. Start with the Gyroglider, later add an engine and make it a self-propelled Gyrocopter. Ideal way to qualify for a pilot's license. Complete construction plans and factory kits available. Get 3-View Drawings, specs, photo of the Gyroglider \$2, or the Gyrocopter \$3. Order today!

SEND \$2 OF \$3 BENSEN AIRCRAFT CORP. Dept. AAM-79  
Raleigh-Durham Airport, Raleigh, N. C. 27602  
NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_

## CUTS-GRINDS- DRILLS-DEBURRS- BUFFS-POLISHES- ROUTS-SHAPES....

A rugged electric motor runs at a slower 3000 RPM for safe, fine and precision work on plastic, wood and metal hobby materials.

AT FINE HOBBY STORES

ONLY  
\$15.95  
RETAIL

BADGER  
ALL ELECTRIC  
BENCH TOP  
POWER TOOL  
WITH FLEXIBLE SHAFT

FREE  
BROCHURE



or write to: Dept. B  
BADGER AIR-BRUSH CO.  
9201 GAGE AVENUE • FRANKLIN PARK, ILLINOIS 60131

## A Treasury of HARD-TO-FIND TOOLS

NEW CATALOG

Unique collection of hard-to-find versatile hand tools and small power tools rarely found in stores or other catalogs. Large selection of unusual knives, precision tweezers, jewelers' and electronics pliers, flexible shaft machines, endless hacksaw, diamond glass cutter, soldering iron, carbide hacksaw blades, silver solder, micro-miniature tools and scores of other fascinating items to make projects easier, more fun. All are top quality tools. Used extensively by modelers, woodworkers, machinists. Money-back guarantee. Send 25¢.

**BROOKSTONE CO.**

7932 RIVER ROAD, WORTHINGTON, MASS. 01098

## MFG.—JOIN NOW!

The Radio Control Industry Association is an association of manufacturers endeavoring to promote radio controlled model aviation as a sport. We are working with the AMA and other trade associations to try to promote radio controlled aircraft competition as well as a sport and fun-time utilization of our products. We also are mindful of the race car and marine applications of our equipment. Dealers, jobbers, and friends of the sport may join as associate members at the rate of \$10.00 per year. For further information write to John Maloney, c/o R.C.I.A., 8960 Rossash Avenue, Cincinnati, Ohio 45236.



RADIO CONTROL INDUSTRY ASSOCIATION

Bill Falck did not design his racer to replace the J-3 cub.

## CONSTRUCTION NOTES

**Fuselage:** Cut out the sides from rather stiff  $\frac{1}{16}$ " sheet balsa. Locate and glue F2 and F3 in place on the right side. When dry, glue the left side in place holding down with weights and/or pins. Use contact cement to add the  $\frac{1}{16}$ " sheet vertical doublers between F2 and F3 and glue the  $\frac{1}{8}$ " square stringers to the bottom of the sides. Glue and clamp the rudder post in place. Make sure it's vertical.

Install 2-56 blind nuts in F1 to take the .02 engine bolts and epoxy F1 in position at the indicated side and downthrust angles. Locate and glue F3A and when dry add the  $\frac{1}{16}$ " sheet rear decking. Sand the bottom edge to fit the sides and use a block to sand the top edges flat.

Add the soft  $\frac{1}{4}$ " sheet top to cap the deck and add the fin, being careful to align straight. Round off the corners of the deck and use plastic balsa to fillet around the base of the fin. Add the stabilizer saddle to the top of the fin and brace with a  $\frac{1}{4}$ " triangular strip. Be sure there is zero degrees incidence. Add the  $\frac{1}{8}$ " square strips to F1 and F2 and glue cockpit dash panel F2A in place. Add  $\frac{1}{16}$ " crossgrain cockpit "floor."

Cover the forward fuse top with 2 pieces of soft  $\frac{1}{16}$ " sheet, moistening them on the outside so they will bend without splitting. Take time to fit carefully before gluing. Add  $\frac{1}{4}$ " nose doublers and install a  $\frac{1}{2}$  oz. tank or make one of thin brass. A cylinder  $1\frac{1}{4}$ " long by  $\frac{7}{8}$ " diameter will give double the normal Cox tank time. (Note: if the regular Cox tank is used, the motor bulkhead F1 should be positioned  $\frac{7}{16}$ " further back than shown on plans.)

Glue the  $\frac{1}{2}$ " bottom nose block in place

## American Aircraft Modeler

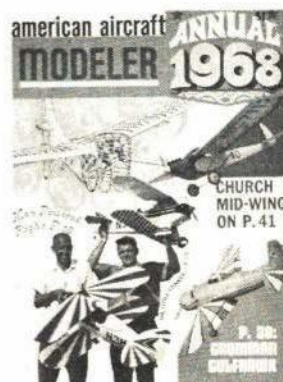
1968 Annual

NOW AVAILABLE BY MAIL-ORDER

### Features:

Little Stinker R/C  
Grumman Gulfhawk U/C  
Church Mid-Wing FF  
Man-Powered Flight/New  
Construction Techniques/  
Scale/Plastics/Rocketry/  
... and MORE!

Just \$1.00 per copy, postpaid (\$1.25 if outside U. S. and Canada)



## AMERICAN AIRCRAFT MODELER

733 Fifteenth Street, N.W., Washington, D. C. 20005

I've enclosed \$..... for ..... American Aircraft Modeler 1968 Annual(s).

RUSH TO .....

ADDRESS .....

CITY ..... STATE ..... ZIP .....



and round to shape. Carve the cheek blocks and oil cooler fairing and glue in position. Leave the bottom face of the cheeks until they can be fitted to the leading edge of the wing. Around the tank and battery compartment use foam — use white glue to avoid "melting" the foam.

Install the torque rod and finish sheeting bottom. Don't add the cut down canopy until ready to paint. Don't add the rudder until all doping is completed and dry. Keep your finish light: 1 sealer, 2 coats of clear, 2 color and one clear should do it.

**Stabilizer:** Choose light wood. The  $\frac{3}{16}$ " x  $\frac{3}{32}$ " edging helps considerably to reduce warping.

**Wing:** Locate rib notches from the plans.

Make sure the landing gear is firmly anchored. Covering was colored silk and clear dope. Again — keep it light. Attach the wing to the fuse for the addition of the back section of the oil cooler and soft block to blend in with the fuse bottom. Anchor the forward wire hold-down hooks with epoxy.

Try different wheels if the CG needs adjusting. Good luck and have a ball!

## DISCOUNT HOBBY HOUSE

engines, kits, accessories, R/C gear



Discount Catalog 10c

**RADIOMODELS**

Box 73, New Lenox, Illinois 60451

Phone: (815) 485-8702

# What Can You Say About An Uncommon Hinge?

Micro Molding  Precision Hinges are similar to many common hinges found in hobby shops. So what is the difference between Micro Molding  Precision Hinges and the common hinge? Nothing... except the name behind it. We take the same pride in our products that you take in your model airplanes.

### PRECISION HINGES

Pkg. 6 for \$1.10 Pkg. 15 for \$2.50

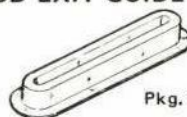
**MICRO-MOLDING CO.**

2917 Edith Lane

Fort Worth, Texas 76117

SEE YOUR LOCAL HOBBY DEALER

### PUSHROD EXIT GUIDE

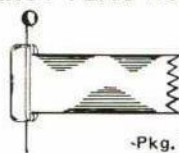


Pkg. 2 for 50¢

### MODEL DISPLAY CHOCKBLOCKS

Pkg. 4 for 75¢

### FREQUENCY FLAG HOLDER



Pkg. 2 for 45¢

DEALERS INQUIRIES INVITED

## PLANS & THINGS

### PEANUT SCALE SCALE DRAWINGS FLYING SCALE

PIRELLI RUBBER & AUTOGIROS

SEND 25¢ FOR OUR ALL NEW

## 1969 CATALOGUE!



1909 ANTOINETTE: By popular request, highly detailed plans for this magnificent machine are now available. One of the most graceful aeroplanes ever built. Rubber powered, stick & tissue type 23" span. \$1.00

California customers add 5%. Add 25% for foreign shipments. W. C. HANNAN, GRAPHICS, P.O. BOX 1596 ESCONDIDO • CALIFORNIA 92025

## YOUR SEARCH JUST ENDED



\$11.95

KIT = G-9

### RED SIMPSON'S "TALON"

42" Length

80" Wingspan

(two-piece, plug-in)

### A/2 NORDIC SOARER SUPERB!

- ★ Hardware Packet ★ Hardwood Spruce Spars, Longerons ★ Tubing
- ★ Precision Die-Cut Balsa & Plywood ★ Selected Sheet & Strip Balsa
- ★ Tapered T.E. Stock ★ Covering Material ★ Detailed Full Size Plans



### "DOLPHIN" Stunt Controline



\$13.95

KIT = CL-6

### Jetco NAVIGATOR Amphibious Flying Boat

AMA 8932



\$13.95

KIT

For 049 to 10 Engines,

Free-flight

Single Channel Radio Control

It's home is the blue water. Designed for I-1 An N.A.C.A. Long Planning type hull design, with engine set high overhead in a nacelle. Stays dry in normal landings, and unlike converted free-flight, flying boat types seldom upset on the touchdown. The "Navigator" is a beautiful, graceful capable aircraft, stable on water, on the climb, glide and landing. A roomy fuselage for radio installations, access through top of the cabin. R/C electronic equipment is fully waterproof when shrouded in Saran-Wrap. Operate in salt or fresh water.



49" Wingspan

29 to 35 Engines



C. A. ZAIG CO. INC., 883 LEXINGTON AVENUE, BROOKLYN NEW YORK —

See your dealer today for these and other fine Jetco kits of all types. If no dealer is convenient, send us 25¢ additional, and mail order will be filled direct.

## NO TERMITES IN OUR BALSA!

## THE BEST MODEL PAINTING IS DONE WITH AN AIR-BRUSH

More natural, more authentic painting and finishing. Mix your own colors. Fogging, blending, custom finishing without brush marks.

ECONOMY MODEL ONLY \$5.98 RETAIL

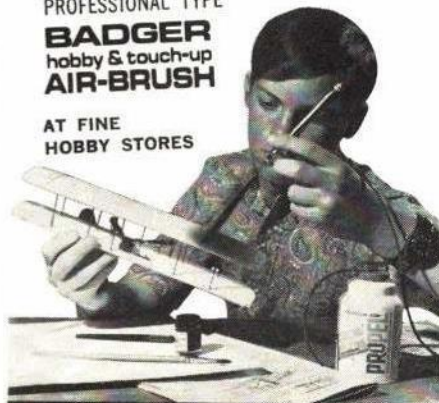
### BADGER PAINT-SPRAY AIR-BRUSH

FREE BROCHURE

PROFESSIONAL TYPE

### BADGER hobby & touch-up AIR-BRUSH

AT FINE HOBBY STORES



or write to: Dept. I

**BADGER AIR-BRUSH CO.**

9201 GAGE AVENUE • FRANKLIN PARK, ILLINOIS 60131



## INDEX TO ADVERTISERS

Academy Products Limited	78
Ace Radio Control	38, 39
Airtrol of Adrian	37
Ambroid Co.	71
America's Hobby Center	10, 11
Associated Hobby Manufacturers	78
BK Model Products	70, 78
Badger Air-Brush Co.	80, 81
Bensen Aircraft Corp.	80
Brookstone Co.	80
Burns Industries	70
C & H Sales	77
Centuri Engineering Co.	82
Citizen-Ship Radio Corporation	75
Classified	82
DuBro Products, Inc.	9, 78
Dumas Products	58
Edmund Scientific Co.	71
EK Products Inc.	3
Estes Industries	64
F.A.I. Model Supply	68
Finishing Touch Decals	64
Fox Manufacturing Co.	60
Gannon Collections	63
G.E.M. Models	74
Carl Goldberg Models, Inc.	61
Great Lakes International	72
Grish Brothers	57
Paul K. Guillo, Inc.	71
W. C. Hannan, Graphics	81
John Hathaway	74
Hawk Model Company	73
Heath Company	41
Hobby Helpers	77
HobbyPoxy Products	70
K & B Manufacturing Co.	74
Kaffey, Inc.	72
Lanier Industries, Inc.	69
Micro-Avionics	52
Micro-Molding Co.	81
Midland Pacific, Inc.	57
Midwest Products	65
Model Rectifier Corp.	4th cover
Model Shipways	58
Myers Models	64
Octura Models	54
Orbit Electronics	7
Phil-Leys	71
Polk's Hobbies	4
Product 60 Hobbies	68
Quality Hobby Shops	82
Radio Models	81
Revell, Inc.	77
Rocket City R/C Specialties	74
Royal Electronics	3rd cover
Scientific Models, Inc.	5, 66, 67
Stanton Hobby Shop, Inc.	79
Sterling Models, Inc.	56, 57
Stinger Mfg. Co.	77
Su-Pr-Line Products	62
Tatone Products	78
Top Flite Models, Inc.	59
Vashon Industries	57
Verdell Instrument Sales	75
Jim Walker Manufacturing, Inc.	68
Warner Industries	76
Williams Brothers	72
Wing Manufacturing Company	78
World Engines	2nd cover, 54, 55
C. A. Zaic, Inc.	81

## QUALITY HOBBY SHOPS

Quality Hobby Shop spaces are sold on a six-month basis at \$7.00 per month, payable in advance. All insertions must be consecutive. No mention of mail-order business is permitted. Closing Date: 10th of third preceding month.

### MASSACHUSETTS—CAMBRIDGE

Model planes, motors, railroads, ships, radio control equipment and accessories — also slot racing supplies. Open 9:00 a.m. to 5:30 p.m. daily & Thurs. evenings.

### CROSBY'S HOBBY CENTRE

1704 Massachusetts Ave. (617) 547-4389

### OHIO—CLEVELAND

We carry the most complete line in Ohio for your model airplane hobby. Also large HO train dept., boats, R/C, slot racing, motors, parts, supplies, dope, balsa, tools, books, magazines, etc.

### NATIONAL HOBBY INC.

5238 Ridge Road 749-4750

### OHIO—CLEVELAND

Ohio's largest model rocket center. Complete line of Centuri and Estes parts and kits, try us first!

### TOM THUMB RACEWAY

13803 Ridge Road (216) 237-6440

### HONG KONG—KOWLOON

The most complete stock of aeromodeling and hobby supplies in the Far East. Sole Agents for Graupner, O.S. and Min-X and agents for Veron, Frog, Solarbo and many others.

### RADAR CO., LTD.

2 Observatory Road Kowloon, Hong Kong K-680-507

### MICHIGAN—DETROIT

Trains, planes, stamps, coins, R-ways. Over 50,000 items for hobbyists. Mich. largest antique train collection. Look for our 55' RR crossing sign. Arnold Rapido.

### MODELS HOBBY CENTER

22524 Woodward Ave. LI 3-2242

## CLASSIFIED ADS

Rates: 30¢ per word (including name and address). Minimum—14 words. Send remittance with copy and order to: AMERICAN AIRCRAFT MODELER, 733 Fifteenth St., N. W., Washington, D. C. 20005.

FUEL — Nitrated. \$5.00 gallon. Dealer inquiry invited. "HOT ROD CITY," 2930 Sepulveda, Torrance, Calif. 90503.

BACK ISSUES Air Trails, Air Progress, Aero Digest, Flying Aces, Popular Aviation, Aeromodeler, Airnews, M.A.N., all model, pulps, etc. AVIATION MAGAZINES, 24248 S. Crenshaw Blvd., Torrance, Calif. 90505.

FREE CATALOG, 1,000 aviation books. Many with scale drawings and 3-views. AERO PUBLISHERS, 329 M Aviation, Fallbrook, Calif. 92028.

MONEY? Save lots of it. We know of nobody who beats our prices. Write for free R/C-Kits-Supplies List. PUGET SOUND R/C ELECTRONICS, 1547 Hoff Rd., Bellingham, Wash. 98225.

INDOOR KITS AND SUPPLIES. Nichrome wire, micro-film, parts, scale plans, indoor balsa. Send stamped addressed envelope for free literature. MICRO-DYNE, Box 2338, Leucadia, Calif. 92024.

NEWEST AND WIDEST variety of plastic models from the world over. Send 10¢ for list. Visit our complete hobby shop. BAYONNE HOBBY SHOP, 815 Broadway at 37th St., Bayonne, N. J. Telephone 201-437-0005.

"THERMIC 100" WING STAB KIT: Die cut  $\frac{3}{32}$  ribs, Spruce-capped balsa spars. \$9.00 Postpaid. ZAIC, Box 135, Northridge, Calif. 91324.

SCALE R/C FLORIDA SWAMP BUGGY PLANS, 19 to 23 \$5.00. MY HOBBY SHOP, 24621 Baseline St., San Bernardino, Calif. 92410.

CUSTOM R/C FUEL — Blended and priced for the R/C and Sports flyer. Top quality — money back guarantee \$3.95 per gallon. 4 gallons minimum. Dealers write. FOB — Dept. F, 1801 South 2nd Street, Milwaukee, Wis. 53204.

WANTED — BALL .60 IGNITION, Drone Redhead Glow, Edco .45 Diesel, Orwick, Dualpump Super Cyclone "G" Series, Orr .65 Ignition. State condition, prices. RAYMOND LEONE, 219 North Jefferson, Batavia, Ill. 60510.

SCALE 2" to 1" Model Plans you build from, not just drawings. Plan Rib & Former Kits (cut out)

S.P.A.D. 13	\$7.95	\$21.00
Albatross DV/DVA	\$7.95	\$19.00
Fokker Triplane	\$7.95	\$19.00
Eindecker E-111	\$6.95	\$15.95

AEROTEC MODEL ENGINEERING CO., 76 Condit St., Harrison, N. Y. 10528.

REDUCED PRICES! PLANE, BOAT, R/C KITS. Get the Green Sheet Specials. A periodically printed FREE bulletin offering special prices and new items, combination ready-to-fly deals. Send request to STRATMAN CRAFT KITS COMPANY, P. O. Box 1528, Altadena, Calif. 91001.

HOBBY SUPPLIES — All popular lines at discount prices. Send for free price list. LAWCO SALES, Box 244, Walpole, Mass. 02081.

WANTED — IGNITION Howler, Bungay, Atwood Champion, Contester D60R. State condition, prices. RAYMOND LEONE, 219 North Jefferson, Batavia, Illinois 60510.

Wanted to buy ignition engines and scale Berkeley kits. Jerome Hilton, 1801 Father Ryan Ave., Bilozi, Miss. 39530.

Wanted — Home Brew aluminum motor mounts for OS 19. John Zeman, 51 Shenandoah, Buffalo, N. Y.

ENGINES, IGNITION, JET, DIESEL, GLOW. Lists 25 cents. HOYT, Box 1146, Decatur, Ga. 30031.

MONOLINE EQUIPMENT — Stanzel control units and handles. H & R torque transfer control units. All new size monoline wire in stock. Pure nitro \$10.00 gallon. BILL'S MINIATURE ENGINES, 1323 Carol Dr., Memphis, Tenn. 38116.

# YOU HELP MORE THE UNITED WAY

## SATURN V Flying Model Rocket

*An exact scale model kit of the rocket that will take the first man to the moon...*

3½ feet tall  
Apollo Space Capsule  
3 big parachutes  
Thermal formed parts  
Finest detailing  
Saturn picture booklet

SEE YOUR  
CENTURI  
HOBBY DEALER  
— OR WRITE:

**Centuri**  
The quality leader  
in high flying model rockets

Centuri Engineering Company  
P. O. 1988, Dept. C79, Phoenix, Ariz. 85001  
Dept. C79 Phoenix, Arizona 85001  
Gentlemen: Please send me

- ☐ Saturn V kit #KS-12 ..... \$15.95  
(engines and launcher not included)  
☐ Starter Special ..... \$8.95  
(complete rocket outfit for beginners)  
☐ New Color Catalog (free w/order) ..... 25¢

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Get your copy of the world's biggest  
model rocket supply catalog  
Just 25¢ (full refund on first order)







# ask the competition at

**Wichita, Omaha, Billings, Amarillo, Albuquerque,  
Winter Nats, and Salt Lake...or**

You can ask Lloyd Nicholson, a service technician at Royal Electronics, first hand about his success with his Skeeter (See May issue RCM for plans) and the Royal Classic Digital System. Lloyd's a modest fellow, so we took the liberty to list his accomplishments for 1968.

5th	Class III	Expert	Wichita June '68
3rd	Class III	Expert	Omaha August '68
1st	Class III	Expert	Billings Sept. '68
2nd	Class III	Expert	Amarillo Sept. '68
1st	Open Pylon		Albuquerque Nov. '68
5th	Class III	Expert	Winter NATB Dec. '68
1st	Class III	Expert	Salt Lake City 1968

**Royal Classic Competition Series For 1969**  
Dark blue metallic vinyl transmitter case/Single deck receiver with integrated decoder/Servos—your choice of mechanics Orbit PS-2, PS-3, PS-4D, Kraft KPS-9, KPS-10/Stick Assembly—your choice of Kraft 2 axis, Kraft 3 axis, Mi-

cro or Bonner/Frequency—27MHZ, 50MHZ, and 72MHZ Band/Airborne System Weight—14.9 oz. (6CH) with PS-3 Servos.

	Factory Built		
	Bonner Stick	Kraft Micro	Kraft SS
2CH	\$279.95	\$289.95	
3CH	319.95	329.95	
4CH	379.95	399.95	\$409.95
5CH	394.95	414.95	
6CH	409.95	429.95	439.95

*Dealer inquiries invited—Modelers write direct if not available locally—Write for prices of complete systems and components.*

**ROYAL ELECTRONICS CORP.**  
2101 So. Leyden Box 22204 • Denver, Colorado 80222

**royal**  
CLASSIC



CURTIS SB2C Helldiver  
with rockets and folding wings



BREWSTER BUFFALO  
operating flaps, gear  
and ailerons



GRUMMAN TBF AVENGER  
folding wings, operating canopy



## build the **FAMOUS PLANES** of **WORLD WAR II**

**AUTHENTICALLY DETAILED  
1/72 SCALE MODELS**

**KIT PRICE ONLY 70c**

CURTIS P-36A  
predecessor to P40  
with flaps, operating  
ailerons and gear



DOUGLAS SBD DAUNTLESS  
rear cockpit gunner and split flaps



GRUMMAN WILDCAT  
America's most famous  
carrier fighter —



### **Models of Army and Navy warplanes of the 1941 era**

**— and with many moveable parts**

... Here's what you've asked for ... a complete collection of the best known WWII U.S. warplanes in exact 1/72 scale. MRC has selected the famous planes that were on duty during Pearl Harbor.

Start your collection right away ... build each

of the six models in the battle dress you prefer. All models feature many of these moving parts: retractable landing gear, operating ailerons, flaps, sliding canopies, folding wings on carrier models, turning props and wheels — plus proven MRC quality detail ... all for only 70¢ each!



**MOST REALISTIC COLLECTION OF SCALE MODELS**

**MODEL RECTIFIER CORPORATION**

**5300 21st AVENUE • BROOKLYN, NEW YORK 11204**

See your Hobby Dealer  
— if he can't help you  
write us directly